The Builder.

VOL. LXX. NO. 2765. FEBRUARY 1, 1896.

ILLUSTRATIONS.

Monument to Emile Augier: on the Place de l'Odéon, Paris.—M. Ernest Barrias, Sculptor ..... *Double-Page Ink-Photo.*
National Bohemian Museum, Prague.—Professor Jos. Schulz, Architect ..... *Double-Page Ink-Photo.*
Three Alternative Designs for the Treatment of the Study.—By Mr. W. Tillott Barlow, A.R.I.B.A. ..... *Double-Page Ink-Photo.*
North-east View of a Mansion, Folkestone.—Mr. G. H. Gordon, Architect ..... *Double-Page Photo-Litho.*

Blocks in Text.

Sketches at Caudebec. By Mr. E. Turner Powell ..... Pages 92, 93
Plan, Mansion, Folkestone ..... Page 94
Window, St. Peter's, Bournemouth. By Messrs. Percy Bacon Bros. ..... „ 95
Illustrations to Student's Column: Joints used in Carpentry ..... Page 97
Diagram: "A Boiler Tell-tale" ..... „ 100
Diagram: Blake's Asphalte-concrete Culvert ..... „ 101

CONTENTS.

The late Lord Leighton 85
A Book on Farm Buildings 86
Notes 86
The Architectural Association 88
Sketches at Caudebec 92
The London County Council 92
Architectural Societies 94
Monument to Emile Augier 94
National Bohemian Museum, Prague 94
Alternative Designs for the Treatment of the Study 95
Mansion at Folkestone 95
New Window, St. Peter's Church, Bournemouth 95
London and Provincial Builders' Foremen's Association 95
Competitions 96
Lord Leighton as Architect 96
The Student's Column: Carpentry and Joinery.—IV. 96
Obituary 98
General Building News 98
Sanitary and Engineering News 99
Foreign 99
Miscellaneous 100
Legal 101
Meetings 102
Recent Patents 103
Some Recent Sales of Property 103
Prices Current of Materials 103
Tenders 103

The late Lord Leighton.

THE death of Lord Leighton, as we have been accustomed to call him for the last two or three weeks (though we are told that the title, as a fact, had not yet been officially confirmed), has come on the artistic world as a painful and unexpected surprise. A few days ago he was attending two of Professor Richmond's Royal Academy lectures, when he appeared in good health, though somewhat aged. Nor is it only the artistic world which has been stirred unwontedly by his decease: the public regret of the nation, perhaps emphasised by the fact that the distinguished artist had just been selected by the Government of the country for the reception of a higher official honour than has ever yet been bestowed on an artist in England, has been widely and unmistakably expressed. His works, it is true, were not of the stamp to which the British mind is most devoted, but on the other hand his position as the President of the leading artistic institution of the country, his reputation as a prominent figure in society, his varied accomplishments, perhaps also his personal charm of manner and appearance, have combined to impress the public mind, and to emphasise the feeling that a notable figure in English life has been removed from among us.

The main facts about Leighton's parentage and start in life have already been given in numerous daily papers, and need not detain us here. The only remarkable event in his life, as known to the public, may be said to have been the immediate and almost unquestioned success of his first large picture, the procession of Cimabue's Madonna, exhibited at the Royal Academy in 1855, and purchased by the Queen. His position and his success were assured by this work, which as the production of so young a man contained full assurance of a remarkable career. The subject, which was what might properly be classed as historical painting, was not in that sense typical of the painter's future career, yet in another sense it may be said to have been so, for it represented the triumph of art, and it was to "art" and not to mere "subject" that Leighton's efforts were devoted throughout his career. Passion and tenderness he had not; the "moral element" was conspicuously absent in his paintings (whether this was a defect or not is too large a matter for discussion here); he aimed only at beauty of form and colour; he seemed a Greek or perhaps rather a Renaissance artist gone astray in the England of the nineteenth century. Such a view of art as this is utterly uncongenial to the average English mind, which, in painting, demands before all things an intelligible subject, a story; and it may be doubted whether the public interest in his works was not rather based on a kind of conviction that he was a great painter, coupled with the fact that he was President of the Royal Academy, than on any general sympathy for the nature and treatment of his subjects. The "Daphnephoria," indeed, excited much general interest and enthusiasm; that, like the Cimabue procession, was a brilliant illustration of an actual event; but we suspect that his numerous neo-Greek studies of figures with classic titles were accepted by the public on trust rather than from any sympathy with them. But for the very same reason he was a *persona grata* to the foreign critic. The modern French critics, indeed, expressed dislike to his manner, to his almost metallic finish and want of texture; they likened him to their own talented and finished academic painter, M. Bouguereau, who has had the misfortune to outlive his best reputation in his own country, though his hand has lost none of its cunning. Yet the latest French critic on English art, M. de la Sizeranne, characterises Leighton as representing "la peinture continentale en Angleterre. Nul parmi les maîtres d'outre-Manche n'est plus considerable, ni moins insulaire:" and we must admit this judgment to be true. There was nothing characteristically English in Leighton's art. He set himself apart from the public taste, from the English desire for pointed story-telling in painting, and aimed consistently at the ideal in art, as regards subject, and at the realisation of style. That he was successful in this latter ambition is the emphatic testimony of the French critic just quoted:—

"De toutes ses forces, M. Leighton tend vers le style et il l'atteint; il a exposé, l'année dernière, une figure de poétesse assise sur un rocher alpestre, la nuit, entourée de pics neigeux, vêtue elle-même d'une robe qui semble un morceau de ces neiges éternelles accumulées sur les sommets de la terre et remontant vers le ciel d'où elles sont sortis. Il a appelé cela *l'Esprit des Sommets;* il eût pu l'appeler *l'Esprit de ma peinture.*"*

There is possibly a double meaning in the last remark; a hint at the comparative coldness of the painter's style, the lack of human interest in his works; but in the main the French critic's testimony is evidently meant to be appreciative; he had found an English painter who cared for something beyond mere subject.

Yet it must be admitted that this idealism, considering that it was expressed through an imitative art like painting, stood somewhat in need of the refreshment and warmth which it might have gained from a closer approach to nature, and it might not untruly be said that Leighton sacrificed some of his powers and narrowed the circle of his art through too exclusive attention to an ideal in which nature, except as regards mere form, had little concern. It is of some interest to find that the possibility of this kind of failure was foreshadowed in the columns of this journal at the very time of the first appearance of the picture which made Leighton famous, the Cimabue. Speaking of the Royal Academy Exhibition of 1855, a writer in the *Builder* of May 19 of that year mentioned the picture in the following terms, which it may be worth while to quote now, as an indication of the impression which the painting made on its first appearance:—

"An event from the career of Cimabue has provided Mr. Leighton with an opportunity of displaying to what extent devoted attention to the practices of a particular school will influence the student, and how far he may succeed in imitating its particular features. . . . The treatment of this remarkable production completely identifies its author with the Venetians; availing himself of extant examples, and appreciating that which constitutes their excellence, he adopts their arrangement of colours, and enhances brilliancy by the silvery hue of greys and half-tones, so remarkable in the works of Paul Veronese. The chief interest is derived from the portraits of contemporaries with Cimabue introduced, though not in every case so perfectly executed as their well-arranged draperies are. Study of realities will overcome some apparent weaknesses, lessen adherence to precedent, and ripen the promise of this very favourable *début.* Too close an

* "La Peinture Anglaise Contemporaine": Par Robert de la Sizeranne.

adherence to an individual style is decidedly reprehensible; if painters studied nature with a conviction of her unquestionable transcendency of all attempts at imitation, and contented themselves by depicting, with as much integrity as possible, only what they really see and know of her, mannerism would become extinct in universal truth."

May we not say that there was something prophetic in this criticism? Not that Leighton retained the style of the Venetian school which he had adopted in this early work; he made a style of his own; but in the continual effort after perfection of style, frankly admitted as successful by our French critic, he neglected nature too much, and became, if not exactly a mannerist, at all events an exceedingly artificial painter. Even in regard to his figures it is matter of common comment that they are not generally flesh-and-blood figures, so to speak: the approach to nature may have been purposely avoided, but the ignoring of nature was carried too far, and resulted in figures which seemed beautiful images rather than living beings. Bouguereau, who has been sometimes regarded as the French parallel of Leighton in painting, without anything like Leighton's powers of invention and design, has succeeded in giving to his equally ideal figures a far greater degree of life than is to be found in Leighton's, and is so far a better because more complete painter, though in interest and variety of subject he cannot compare with Leighton, nor is he by any means so effective a colourist. This indifference to the direct study of Nature is also very apparent in the landscape accessories to Leighton's paintings, which are exceedingly mannered in style. This is the drawback to the "Daphnephoria," for instance, a splendid painting as far as the crowd of figures is concerned, but which looks more like a scene on a stage with a skilfully built-up background than one in actual open-air life. Among the other works which are most memorable among the paintings was the grand nude figure of "Phryne," exhibited a good many years ago, a painting with a really great style about it; the "Juggler," one of the most complete in conception, colour, and mastery of drawing in the foreshortened face; "The Slinger," a remarkable example of a great picture produced by the slightly idealised treatment of a very simple incident; and the "Summer Moon," not only remarkable for the beauty of line and composition in the two slumbering figures, but as almost the only one of the painter's classical compositions in which poetic sentiment is really an important element in the work.

It is not, in fact, so much on the quality of his numerous paintings that Leighton's exceptional position as an artist depends, as on his extraordinary versatility, his all-round and comprehensive knowledge of various forms of art, and his power of dealing with them both in criticism and in production. The style of the majority of his paintings is more or less decorative, but not absolutely what would be suitable for wall-decoration in its pure form; they are still essentially easel-pictures. But when he undertook the decorative painting for a music-room for an American client, which was exhibited at the Royal Academy before it was sent out to America, he threw himself entirely into the strict architectural treatment of wall-painting, and produced a design in a special style suitable for the situation. On the other hand, when undertaking the portrait of Sir Richard Burton, he surprised us by throwing off the usual reserve of his classic style and painting a most characteristic and individualised likeness of a remarkably characteristic personality. His knowledge of architecture is referred to in a letter from a well-known architect in another column; and it must have been a surprise to many architects, when the President of the Academy treated of the architecture of various nations in his addresses to the students, to find that the man whom they were accustomed to regard as a painter was not only well acquainted with all the characteristics of various schools of architecture in detail, but had taken cognizance of such points as the superficial construction of the front of Strasburg Cathedral, the systematic tying in of the front arcades by iron ties to the main wall, without which they could not have been secure, and had drawn special attention to the unarchitectural character of such construction of a design, and the extent to which its existence impaired our respect for the building as a work of architecture; a kind of point to which painters are usually very indifferent. But it was when he suddenly and unexpectedly appeared before the world as a sculptor with his remarkable work "The Athlete," that the full measure of his versatility became apparent. Here was an artist who had for years been known only as a painter, producing one of the finest works of sculpture of modern times. Its author's position was a different one in modern art from that moment. He was a true revival of the Renaissance artist, who could turn his hand to every form of art indifferently. We are inclined to think that "The Athlete" is really Leighton's greatest production; with the exception of some two or three of the smaller paintings, it is the most perfect work he has produced, the most thoroughly beyond adverse criticism. But the most important consideration in connexion with it is the evidence which it affords of Leighton's grasp of art as a whole, not as meaning the devotion to any one form of artistic production. In this sense his position in English art of the day was unique. If all its members showed the same broad comprehension of and interest in art in all its forms which was exhibited by their late President, the Royal Academy would be more fully and truly "an Academy of Arts" than it can at present be said to be. That is the lesson, we think, that Leighton has left behind him.

A BOOK ON FARM BUILDINGS.

FARM buildings, it must be remembered, are a machine for making a living out of, at all events with the larger proportion of those who make use of them; and except in the case of wealthy landowners with whom farming is rather an interesting occupation than a means of living, "model" farm buildings in which everything is constructed in the best and most complete manner and with the latest improvements, and even picturesqueness in the design of the buildings is not overlooked, are to be regarded as luxuries. The real object of farm buildings is that they should enable the farmer to get the best return out of his stock with the least expenditure. Proper drainage and ventilation are no doubt elements in economic farming, inasmuch as they promote the health of the stock, and these are points in regard to which farmers are often very ignorant and short-sighted, and a consideration of which has to be forced on them; but in regard to the buildings to be provided, and their arrangement, the practical necessity of making them pay is in the majority of cases more important than the realisation of ideally perfect buildings and fittings.

Mr. Clarke's small book on "Modern Farm Buildings,"* which has been recently issued in a revised edition and with much new matter, is pre-eminently a book written from this point of view; and it may be said that its special value consists in the double experience of its author, who, as the title-page indicates, is a practical surveyor who has been acting as a land agent, and is thus specially conversant with the requirements of farm buildings from the tenant-farmer's point of view, which is primarily the economic one.

Mr. Clarke not only gives plans for large and smaller sets of buildings in which economy of space, construction, and working is the main object kept in view, but gives useful hints for making other uses of buildings besides those for which they are nominally intended. In altering and improving homesteads, for example, he remarks on the uses to which a barn may be turned: "farmers when they complain that they have not sufficient buildings on their farms do not realise the fact, which is often the case, that if the barn-space were properly applied to modern requirements there would be little to complain of." Barns were originally supplied by landlords for the purpose of threshing corn by hand, but the lower part of them can often now be made into excellent implement-houses, or cart-sheds; they may be fitted up for stock, either as stables, cow-houses, or loose-boxes; they may also, if strong enough structurally, admit of being converted into two-story buildings. These considerations occur in a very useful chapter specially devoted to "The Remodelling of Old Homesteads."

The plans given in the main chapter on the "Arrangement of Homesteads" are excellent examples of compact arrangement, and the north point is duly given on all of them; an important detail considering that the position of many of the buildings is governed by aspect; but it would have been more convenient for comparison of the different forms of plan if they had all been arranged the same way on the plates, with the north at the top of the sheet. The methods of construction recommended for the various buildings are sufficiently illustrated by sections and details. The book is one to be useful both to the farmer and to the architect engaged on farm-buildings, though the latter will receive no encouragement or enlightenment in his frequent desire to produce picturesqueness, which is beyond the scope of the book, and in the majority of instance beyond the proper scope of the farm architect. To make farming pay, everything has to be saved on the buildings that can be saved without rendering them inadequate for their purpose; and, however, unpalatable the conclusion may be, picturesque farm buildings generally mean wasted expenditure, such as will not conduce to a return on the outlay.

NOTES.

THE question of the Paris exhibition of 1900, and the new difficulties raised in regard to it,* is continuing to occupy public opinion in France, or at all events in Paris. There is talk of a new scheme by which the Palais de l'Industrie as it now stands will form the central point of the Exhibition, and be connected with the portion on the left bank by the monumental bridge which has been proposed by the Government; but official opinion is opposed to this idea, which will not do much to improve the Parliamentary proposition. There is a general outcry against the Parliamentary Committee, especially (as is natural) on the part of the architects. It may be worth while to observe that the idea of a stately street from the Champs Elysées to the Invalides is by no means a new one. There is an indication of it in a plan of Paris improvements by Jacoubet, as early as 1836, which is in the Carnavalet Museum. This plan, in combination with various engravings made in 1840, at the time of the transfer of Napoleon's remains to Paris, shows the fine effect of the Invalides at the end of this vista, which was destroyed for the time by the erection of the Palais de l'Industrie in 1854, and which M. Bouvard wishes to re-establish in a better form. The opposition of the Chamber of Deputies is regarded as quite unjustifiable, especially considering that competitions have already been arranged for the designs of the intended buildings.

* "Modern Farm Buildings: their Construction and Arrangement." By A. Dudley Clarke, F.S.I., Land Agent. Second Edition, Revised. London: B. T. Batsford. 1895.

* See note, page 68, *ante*.

THE International Art Exhibition, which will be held at Berlin at the same time as the National Industrial Exhibition, promises to be a success, and (as already mentioned) the German Architectural Room will this time be a feature of the Exhibition. The Emperor has decided to open the Exhibition on May 3, and will be accompanied by the Empress and the Dowager Empress Frederick, who is Honorary President of the Exhibition. The Exhibition halls will be the old ones at the Lehrter Bahnhof, which have, however, been thoroughly renovated under the supervision of Professor Ende. Special medals are being struck, and an international jury will award these distinctions. The jury consists of artists who are members of the order "Pour le Mérite" (civil side) or hold the Prussian Gold Medal, together with the delegates of the foreign exhibitors. Herr Koblasser is the Secretary of the Exhibition.

THE proposal to purchase the West End Hall estate at Hampstead, for the purpose of making it a public park, is one which should be carried out in the interests of the locality. The fact that the cost of the estate will be heavy shows, however, that it would be very desirable if efforts were made, in view of the enlargement of London, to secure open spaces before the adjacent land has been seized by the builder. It is scarcely likely, we fear, that private subscriptions would be numerous for the purchase of what is not an actually pressing open space. There can be no doubt, however, that thousands of pounds might have been saved had the various public authorities, at any rate, secured open spaces, having in view the growth of London. As it is, schemes to obtain open spaces are now in the nature of desperate efforts to save a piece of ground before it is sold to builders who are ready to buy it. Under such circumstances the cost to the public is much greater than if the land had been purchased a few years earlier. There are various pieces of land yet unbuilt over, and not yet quite in the area of building operations all round London, which should be secured for the use of the public in time to come.

THERE is naturally a good deal of speculation as to who will be elected to succeed Lord Leighton as President of the Royal Academy. The idea that Sir John Millais could now be asked to accept, or would be likely to accept, a position to which it was thought by many that he had at least an equal claim when the last election was made, is probably to be regarded as out of the question, though no doubt it would meet with more universal approval than any other choice. One or two very prominent and able painters whose position in the art would give them a good claim to the honour are foreigners, though domiciled in England for many years, and it will probably be generally felt that the President of the Royal Academy of this country should be an Englishman. The name of one painter who certainly cannot be said to be in the first rank of English artists has been a great deal mentioned as a probable candidate, for what reasons we do not profess to understand; but we doubt if this is anything more than outsiders' talk. Among the painters we would venture to suggest that Mr. Orchardson has claims not to be overlooked, both as a painter of exceptional gifts and on personal grounds, which of course are not to be overlooked in such a case. Mr. Poynter would have similar claims in both senses, but his present position at the National Gallery would probably be a bar to his election. The fact that the Royal Academy is professedly an Academy "of Arts," and not of painting merely, might suggest that the central art of architecture, on which (as we are constantly reminded) all the other arts depend and from which they have sprung, has claims to recognition in its turn; and there are two R.A. architects, Mr. Norman Shaw and Mr. Waterhouse, the election of either of whom would probably be very popular. That we may not be accused of wishing to exalt the artists of our own special field, we may add that the idea of such a choice was first suggested to us by a painter-member of the Royal Academy.

THE last of the six advertised lectures by Professor Richmond on Michelangelo, on Thursday last week, was mainly occupied by a consideration of the arrangement and the meaning of the lists of the ancestors of Christ introduced into the Sistine chapel-scheme, and therefore dealt rather with the arrangement of the scheme of illustration than with its artistic quality. But the "extra" final lecture, on the Friday afternoon following, was of special interest, dealing with the groups of figures in the semi-circular bands over the windows. These, which are on the vertical or nearly vertical surface of the springing of the vault, are hardly to be seen from the floor *in situ*, in their present faded condition, but were brought out very well by the fine series of photographs exhibited at the lecture. They consist of subjects only indirectly connected with the main subject of the painting, and appear to be symbolical of the human life, especially that of the family, the mother and children, typifying the human race. Professor Richmond gave a most interesting analysis of these paintings and their apparent meaning, showing how they harmonised in subject and in symbolism with the principal paintings—the scenes of the Creation and the Prophets and Sibyls. In their intensity of symbolic expression these accessory paintings on the Sistine ceiling rather remind one of Blake, but it is Blake with finer drawing and more mastery of the human figure. This series of lectures has been a most important contribution to the right understanding of Michelangelo's masterpiece, and it is to be hoped that their publication in permanent form will shortly follow.

IN a paper read before a meeting of the "Académie des Inscriptions et Belles Lettres," M. Gauckler gave an account of recent discoveries at Uthrina at Tunis. The excavations have laid bare a large villa and fifty smaller private houses. No fewer than eighty-seven mosaic pavements have been found, some representing mythological scenes, others scenes from daily life, *e.g.*, hunting and fishing. The series is a very important one for the history of mosaic art in Africa, as the houses range in date from the time of the Antonines to that of Constantine. The larger number of the mosaics belong to the earlier date, and these are unquestionably the finest; from the middle of the third century a decline is noticeable, and the weakest work belongs to the Christian period. The earlier mosaics are fresh and realistic in character, and the designs gradually harden into stereotyped patterns.

WE noted some time ago Dr. Curtius's interesting theory as to the interpretation of the central slab of the east frieze of the Parthenon. According to Dr. Curtius, we have there represented, not the offering of the peplos, but the bringing of a carpet to be spread before the seats of the twelve Olympian gods. Dr. Furtwängler, with his customary warmth, denied the possibility of the new interpretation, and a brisk controversy on the subject has been going on in the *Classical Review* (ending November, 1895, p. 427). Our opinion from the beginning was that there is much to be said for the theory of Dr. Curtius, and it is interesting to find that the same interpretation has been arrived at quite independently by a Danish archæologist, Dr. Ussing. Dr. Curtius arrived at his new interpretation from a study of the famous Magneria inscription. Dr. Ussing brings a further confirmation, an inscription published long ago and found in Chios. In it we have it stated that a certain Kallisthenes dedicated to the Mother goddess *τὴν στρωτὴν καὶ τὰς καθέδρας*, the carpet and the seats. Dr. Ussing's paper (in Danish unfortunately) is published in the *Verhandlungen der Dänischen Gesellschaft-der-Wissenschaften* for October.

A TABLE of co-efficients has been prepared by Mr. Kendrick to facilitate the calculations needed to ascertain the strengths of rolled joists subjected to concentrated loads at any point of their length. These co-efficients, when multiplied by the load, give the distributed weight which would produce in them the same maximum stress. Most manufacturers publish a list of their joists, and the distributed load they consider such will safely carry, so that, with this information and Mr. Kendrick's table, the section required to carry any concentrated weight can be easily found. We do not, however, think it is desirable to place implicit confidence in these manufacturer's lists of safe loads, some of which imply more confidence in the strength of iron and steel than is generally enjoyed by architects and engineers. One of the lists of safe loads which we have seen has been prepared in a very ingenious manner. The loads are calculated on the supposition that the ends of the joists are "firmly fixed," but it is only fair to say that special attention is drawn to this in the tables. Now, "firmly fixed" is a scientific expression, and we are afraid that those who are not accustomed to engineering parlance are liable to be misled by its use, thinking that all joints in a building would naturally be firmly fixed at the ends. In practice, however, this kind of "fixing" the ends cannot be obtained without very special arrangements that are seldom, if ever, resorted to. Were the ends fixed in this manner, then the joist is only stressed under its load as it would be if it formed a span of a continuous girder of considerable length. Its effective span could be considered reduced to nearly one-half, and consequently its strength as shown in this manufacturer's list would be proportionally increased.

THE subject of Dr. Fleming's second Cantor lecture at the Society of Arts, on Monday evening, was the construction of the alternate current transformer. He began his lecture by showing an interesting hydrostatic model illustrating the action of the transformer. Roughly, it consisted of a U tube with arms of different sections, and when the coloured liquid contained in it was started vibrating it was seen that on one side there were low-pressure oscillations and on the other side high-pressure ones. The phase also of the vibrations corresponded to the phase of the electromotive forces in the coils of a transformer. He then passed on to what is of primary importance to manufacturers, namely, what kind of iron must be used in the coil and what the thickness of the stampings ought to be. Iron with any alloy in it, he said, has been found unsuitable for transformer work, and iron that has only a small magnetic lag should be used, this being far more important than using iron which can be magnetised strongly. Prof. Ewing's theory of the constitution of a magnet as made up of an immense number of molecular magnets was illustrated by the behaviour of four little magnets pivoted between vertical glass plates so that their shadows could be thrown on a screen. These little magnets moved in a very spasmodic manner when a magnet was brought near them, illustrating the irregularity of the growth of magnetisation in an iron rod when a gradually increasing magnetic force is applied to it. He also showed how the model illustrated Mr. Baily's experiments on the absence of magnetic lag in iron when under intense magnetic influence as in the armature of a dynamo. To electricians the lecture was a very instructive one, but we must protest against Dr. Fleming's habit of choosing his

units to simplify his formulæ. The mixing up of inches and centimètres in a short formula is simply indefensible. After the lecture a number of interesting exhibits were shown, lent by various electrical companies. They showed how perfect both mechanically and electrically high-tension apparatus has now become. We noticed, oddly enough, a small Mordey transformer with very short air-breaks in the high-tension switch. We fancy that no experienced electrician would care to use such a switch in practice.

IN the case of the Cambridge Music Hall fire of Tuesday, London has again been exceedingly fortunate, as the outbreak in this very dangerously-planned building occurred in the morning, when there was, of course, no performance, and not even a rehearsal in progress. Had the outbreak occurred when an audience was present a catastrophe with numerous fatalities would practically have been a certainty, as though many improvements had been made in the exits, as compared with the original arrangements, the facilities for escape were exceedingly unsatisfactory. As to the progress of the fire, and its effect on the construction there was little of interest to note, excepting perhaps that the brickwork and masonry stood the extreme temperatures very well. The flames, as is usual in this class of building with a wooden roof, spread with great rapidity, and on the collapse of the roof, the auditorium and stage appeared like a furnace. The strength and height of the walls prevented the fire spreading to the adjoining property, the few openings being well covered by the Fire Brigade, whose efforts were limited to the protection of neighbours and cooling the ruins after the hall had been burnt out.

BRANKSEA CASTLE, which was burned on Sunday last, is the seat of Captain Kenneth R. Balfour, having been purchased, together with the island, in August, 1892, after the death of the Right Hon. G. A. F. Cavendish Bentinck, M.P., who had restored the house in 1888, and embellished it with his art-collection. Branksea, or rather Brownsea, Island, lying within the bay between Poole and the Isle of Purbeck, is about five miles in circumference, and is famous for its beds of white clay. The massive tower, square on plan, of the Castle was built, of brick, in 1545, at the east end of the island, and fortified two years later, by the Corporation of Poole as a defence for their harbour. It was strengthened with outworks *temp.* Elizabeth, who in 1576 appointed Sir Christopher Hatton as castellan: in Charles II.'s time it belonged to another London worthy, Sir Robert Clayton. Having been dismantled in 1722, the buildings were converted into a residence, towards the end of the century, by Humphrey Sturt, who brought into cultivation much of the sandy waste, covered with heath, furze, and fern, of the island. In 1852 Colonel Waugh, of Campden House, Kensington, bought the property; he added to the castle a Tudor front, of Portland stone, and other buildings on its north side. Brownsea Island is, reputedly, the scene of Knut's landing in 1015; and there the Abbot of Cerne founded a chapel and hermitage in Henry II.'s reign.

IT is announced that Lord Churchill has resolved to sell his Cornbury estate, near Charlbury, in Oxfordshire, which includes Wychwood, otherwise known as Blandford, Park. The park, watered by the Evenlode, forms part of Wychwood Forest, which formerly extended for about 60 square miles, and was a favourite hunting-ground of Henry II. Having been since much reduced in area, the forest was ultimately disafforested thirty-five years ago. The manor belonged, *temp.* Elizabeth, to Robert Dudley, Earl of Leicester, who died there, when on his way to Kenilworth, by poison—Ben Jonson told Drummond, the poet—unwittingly given to him by his wife. It was subsequently the home of Henry, Lord Danvers, afterwards Earl Danby, who presented to the University the physic, or botanic, garden he had established in 1622, close by Magdalen Bridge, at Oxford, for which Inigo Jones, 1632, designed the gate (and stone walls) carved by N. Stone, sen. The property then passed to Edward, Lord Clarendon, who thence derived his junior title of Viscount, and, according to one account, built the present mansion; at the end of last century it was bought by George, third Duke of Marlborough, whose son Francis was created Baron Churchill in 1815. A drawing by Neale for the "Beauties of England and Wales" shows the house (built of stone) as having two floors and an attic story, with a tetrastyle portico and angular pediment in the middle of the main front.

VARIOUS minor exhibitions are at present open in Paris. That of the "Aquarellistes," in the Georges Petit Gallery, though smaller in numbers than in some previous years, is a very attractive one. Military subjects are finely represented by a "Napoleon I." of M. Detaille, of rather curious style of execution. Among other works may be mentioned the Interior of a Church by M. Adan, the Hunting Scenes by M. Penne, and the Studies of Cats by M. Lambert. Landscape is represented by some admirable works, in the first rank of which is the "Débâcle" of M. Zuber, which is in fact the salient work of the exhibition. At the gallery of "Peintres Orientalistes" is a fine painting by M. Chasseriau, "Ali Ben Hamet et Son Escort," some very good sketches in Tunis by M. Bompart, Studies in Senegal by M. Perret, and some sculpture by M. Théodore Rivière. At a third exhibition, at the Cercle Volney, are portraits by M. Henner and M. Benjamin-Constant, landscapes by M. Damoye, seapieces by M. Tattegrain, and a noteworthy picture by M. Jean Weber entitled "Jardin Fleuri." As a whole, however, this exhibition, where there are always more amateurs than real painters, is inferior to that of last year.

THE series of water-colour drawings by Mr. Charles Sainton, under the title the "Real and the Ideal," now on view at the gallery of the Fine Art Society, includes some charming fancies among those which represent the "Ideal," and unfortunately a certan amount of artistic vulgarity among those which represent the "Real," and which consist mainly of ballet-dancers in various costumes, all clever and well executed, but pervaded by a kind of *chic* which is not agreeable. Among the ideal subjects No. 1, entitled "To the Tune of the Pipes," is charming, and among others we may mention the slightly executed half-lengths which are emblems of flowers, especially "the White Lily" (25), "Gloire de Dijon" (27), and "Snowdrop" (29). If Mr. Sainton would stick to "the Ideal" and leave "the Real" alone, or choose less vulgar manifestations of it, we should feel more sympathy with his exhibitions.

THE specimens of plates produced from original drawings by Professor Herkomer's new process, which are on view at the Society of Fine Arts Gallery, show that it is a complete success in producing a satisfactory reproduction of an artist's original brush-work drawing, with a result somewhat like that of mezzotint, but of a softer and finer grain. As Professor Herkomer points out, it differs essentially from mezzotint in that it is a positive and not a negative process of work. Mezzotint is produced by removing burr from the plate; Professor Herkomer's plate is produced from a positive drawing in a special ink, in which the effect of the original drawing is the same as that which it is intended to have in the reproduction: "there is no guess-work and no working in the dark." A special ink is employed, and the process of transition from the drawing to the plate is thus briefly described. The artist—

"paints or manipulates a thick black ink on a silvered copper plate, much as he would on any non-absorbent ground. When the black-and-white picture (on the silvered surface) is finished, it is subjected to a form of granulation, which, however, in no way affects the autographic value of the artist's touch. . . . The granulation is affected by a powder composed of two ingredients, one to give granulation, and one conductibility. As the artist's work has been made into a conductible surface, it can be placed in an electric bath, and an electrotype taken of it. Thus we get the negative required. The impressions taken from this electrotyped plate by means of the printing press will represent precisely what the artist painted on the plate in the first instance."

The process, as Professor Herkomer remarks, is best suited to spontaneous and original work, or to the artist's interpretation of his own work. As to how many impressions the plate will produce without weakening we have as yet no certain information. But as far as it has gone the result is excellent.

THE ARCHITECTURAL ASSOCIATION:

COPPER.

THE ordinary fortnightly meeting of the Architectural Association was held on Friday evening, January 24, in the meeting-room of the Royal Institute of British Architects. Mr. W. D. Caröe, M.A., F.S.A., President, in the chair.

Mr. V. Steadman having been elected a member of the Association,

The President announced that it having been found that the lectures on "Practical Design," by Mr. Beresford Pite, had been fixed for evenings when they clashed with Mr. Farrow's lectures, a new arrangement had been made, and the next of the series would be delivered on Monday, February 17. It was hoped that the members would attend these lectures as far as possible; they had been very successful in the past, and it would be a thousand pities if they were deserted in the future. The first meeting in connexion with the classes on "Materials: their Nature and Application," by Professor Kerr, would be held on February 11, at 7 o'clock.

The Senior Hon. Secretary (Mr. Banister F. Fletcher) said he had been asked by the Lyric Club to state that the annual dance in connexion with the club would be held in the King's Hall, Holborn Restaurant, on February 4. The first Spring Visit of the Association would take place to the National Gallery of British Art, Grosvenor-road, Millbank, on February 8, by the kind permission of Mr. Sidney R. J. Smith, who would conduct the party over the building.

Mr. Nelson Dawson then read the following paper on "Copper:"—

Very little has been written on the subject of copper. How little, one hardly knows until having, on occasion like this, to find chapter and verse one goes a little more deeply than usual into it. In hunting up authorities one takes down from the shelf first, of course, "Encyclopædia Britannica"—which looms amid its contemporaries as the *Times* amongst newspapers—afterwards those of lesser note. This course is both safe and respectable, and by so doing one is not likely to be committed to any very glaring error, nor, for that matter, to any particularly interesting truth. Here we find, however, all these authorities seem to agree in stating, at the outset, that copper received its name originally from being found in Cyprus—hence its Latin name *cuprum*, and finally its present one. It is said to have been there mined by the Greeks or Romans or both; smelted by them and exported to the mainland to be worked on by their artists and artificers. After these statements, the encyclopædias that are illustrated seem to be anxious to change, if not the whole subject, at least this phase of it which otherwise might be getting dangerously interesting, and proceed to give many pages of illustrations of ore crushing and stamping machines that one would hardly connect with such a mild and domestic kind of metal as copper. These are of little account to the artist, and one turns the pages hurriedly to the end of the article, which concludes by stating that this metal is of a reddish colour, and has some mysterious chemical signification that would be understood only by a scientific expert.

But seriously, the fact that copper *did* come from the little Island of Cyprus long centuries before Christ, is of interest, and a slight effort of imagination takes us back to the old Greek workers who, in their seaport town, went down

to the quays to buy the metal in which they worked. As we see pigs of iron and lead on our quays nowadays unloading from some huge steamer, so was it with the old Greek seamen who had brought in their "hollow ships, whose oars splashed in the grey sea-water," as Homer tells us, the irregular shaped lumps of copper, each stamped with the sign of the town from which it came—a head of Mars, an ear of corn, or may be the badge of Athene herself.

The copper was thus brought within reach of the Greek workman, and ready for him to take in hand, but, somewhat strangely, he did not use it until it was mixed with another metal and turned into bronze.

Archæologists tell us of a copper-age, when not only cooking and other utensils, perhaps armour, but knives and chisels and other things that required a cutting edge, were made of this metal. They even speak of a metal statue being chiselled with copper chisels, and this on some ancient writer's authority. The ancients were enabled to do this as they had some special knowledge of *tempering* copper as we now temper steel, so making it harder than the metal required to be chiselled. This is interesting, and, if true, and the method discoverable, it would be of benefit to those who work in copper nowaday.

It will be well to point out here that heat softens copper; hammering or any equivalent pressure, such as rolling, hardens it; and no other processes than these are known or used. The same thing happens with other metals; and even in steel, where the tempering is done by heat, it is the plunging while hot into water or other substance that effects the temper rather than the heat; for the steel, if allowed to cool right out gradually, would return to its softest form. This, however, is rather a digression, and the point that we were concerned with is about the Greeks using bronze rather than copper. There is a theory that bronze arose in the beginning from the fact of copper and tin being found side by side almost in Cornwall—not infrequently in a nearly pure state, which would thus need but little smelting; that the natives who found and worked them knew by experience that either alone was too soft for any practical purpose, and accidentally discovered that mixed together another metal was formed that had the very qualities they required. But what seems strange is that the Greek metal-worker who used sheet metal largely, and often in cases where hardness was no object, such as plates for covering doors and walls, the metal hammered into shape and pinned on to wood of which he made statues before the art of casting was invented, should not have beaten the sheet out of these lumps of the softer copper instead of the harder bronze.

At present, in cases where sheet-metal is required to be ornamented with repoussé or beaten work, copper would, if possible, be always used, and bronze, as the Greeks used it, never; in fact, sheet bronze is not procurable for some reason. The nearest we have to it now is an alloy that is used by silversmiths, and called gilding metal. I am not sure of the constitution of this alloy, but probably it is not a true bronze. Where used at all it is only to beat up and chase a pattern in from which silver would be cast; it is never used for the beauty of itself as the bronze of old was. Neither this gilding metal of which we speak, or any other metal, silver or brass, is so pleasant to work in as copper; and that is perhaps why it is such a favourite.

As specimens of the very high point the Greeks reached with their beaten work in sheet bronze, one has only to recall the mirror-cases ornamented with mythological subjects in relief. The greaves, helmets, and armour generally was treated in the same way, hammered up out of flat sheet bronze; and though everything they touched became, as if by magic, a work of art of importance, the mirror-cases, of course, take precedence. One of the world's treasures, "The Shoulder-straps of Siris," are worked in the method we have been considering, and those who do not know them should study them carefully at the British Museum.

Where cast-metal was concerned, there is no doubt the Ancients soon found out that copper was much inferior to bronze; and when the art of hollow casting was introduced, or discovered about 800 B.C., the Greeks were so pleased at being able to multiply their works of art that some of their cities were crowded with bronze statues, and the alloy took as much hold of them as brass has of ourselves in these times.

It is said that copper cannot be used for casting, either that it will not pour satisfactorily, or cracks in cooling, gets air-holes in it, or some other reason; but if one orders anything, such as a door-handle to be cast in copper, the founders manage it somehow, after a little protesting, probably by adding so little tin as would make the metal run sweetly into the mould, but not enough to alter the colour. Anyway it is not worth much when done, for it is so soft that under the file it seems very like lead; and unless a casting in copper were particularly required for the colour, it would be more satisfactory to have it done in some other metal.

As stated, the small amount of tin used to make the bronze run would not affect it much, but as more is added and the proportions of tin and copper vary, the alloy hardens up rapidly until the gunmetal stage is reached—which I believe is about 33 per cent. tin to 67 copper—and this, as we know from experience, is a most valuable and useful metal. The colour that the copper and tin alloys take is very interesting, the red of the first named soon disappearing; and in the gunmetal alloy where there is two-thirds copper to one-third tin, there is certainly not two-thirds of the copper-red remaining. When about 40 per cent. of copper remains to 60 per cent of tin, a lovely lilac colour is produced; and after this, as the tin still further increases, the colour varies but little from the pale silvery quality of the pure tin itself. To artists this range of colour ought to be of considerable value—the mingling of them in one work would be so effective. The only objection would be that, as the colour varies, so their granulation and malleability varies too; and some alloys are so brittle that under the hammer they break into fragments like common cast-iron. So that in choosing the *colours* of alloys it would also be necessary to ascertain their conditions in other respects. But several, at least, would be capable of being used in some other form; and if we single out pure copper, gunmetal—the lilac and tin—we should have four colours to deal with out of which a charming effect might be made.

In talking about metal, its uses and design, the metal-worker, unconsciously perhaps, divides the subject in his own mind into three parts—cast, forged, and sheet. Here are the three different treatments to which nearly every metal can be subjected, and the three processes that the designer can take advantage of in thinking out his design. These practically are also the three different trades into which metal workmen are divided.

It is not until we come to look closely into the thing that we see how widely apart these three branches lie. One may not realise at the first glance that under the heading "cast" nearly all statuesque and sculptors' metal-work must be done; and if we do not admit that it "must" be cast, at least we know that it always has been so up to the present, except in very early days.

For *wrought* work we may take, as an example, the Eleanor grille in Westminster Abbey, that monument of twelfth-century skill in ironwork.

For treatment of metal in *sheet* we might instance the elaborate figure-compositions of Cellini's time, that have since then been used to cover shields with, or to beat up a dish for an altar, or to put some repoussé ornament on a cup or other plane surface. Here, indeed, are three very different crafts so widely apart that really we should not wonder that they have become so much split up and separated, or that all metals are not capable of receiving all three treatments satisfactorily. Thus, with copper, we find it is practically useless for casting; while in forged work we can with difficulty recall anything in this metal, so we are left with sheet, and here really lies the strong point of copper.

The encyclopædia referred to states that copper is second only to iron in its malleability. That is as may be. The kindliness of copper under the hammer in practice is a constant surprise; with care one is able to do almost anything with it—to bump it up into relief, and then, if it is wrong, to hammer it all flat and begin again; to take a flat piece, and hammer it first into a cup-shape, afterwards drawing in the top and lengthening it upwards until the original piece of sheet-copper is a vase with oval body and long narrow neck. A metal-spinner of much experience said that in their trade the most difficult thing to do was the ordinary stethoscope that doctors use. But a good coppersmith would not make any difficulty about such a shape if he had a good bit of copper to do it with. Formerly the common jelly-mould was the triumph of the craft, and it is easy to understand that to make a shape with many pinnacles and castellations from flat sheet, keeping a fairly even thickness and never tearing open the metal, took some skill (one uses the past tense because, probably, being such a very fine sort of craft, it is by this time obsolete, and put aside in favour of a mechanical process, such as stamping).

Repoussé has come to be the general term for all ornamental work raised on sheet-copper by the hammer. The prefix "re" probably means "back," so that it implies that some part of the metal is beaten back. It really hardly matters if, to gain the relief, one beats up the design from the back, or beats back the background in front—pretty much the same end is reached.

If you see a new pattern in a silversmith's shop in Regent-street, a brush-back, mirror-case, or whatnot, in relief, that pattern has been bought by the shop from some chaser who has designed it and beaten it up in copper. The business-man buys it, has it either cast, or, perhaps, a stamp made to turn it out by the hundred, each impression being slightly worked on to give an air of reality, or still more likely nowadays, would have a mould taken from the chaser's copper-pattern, and take electros from this. Besides these patterns, silversmiths have some of their large vase and bowl shapes beaten up in copper and finished with all the ornament complete and then silvered.

When the old Georgian tea urns passed away with our grandparents, a great and interesting phase of the copperworker's craft went. There was a considerable variety of design in them, and, being used by the richer sort of folk, the standard of design was kept up, and in all of them there was a refinement, which, if not of the highest sort, shows an interest on the part of those who produced them. We do not think much of a globe shape in metal to-day when spinning can quickly give us almost any shape we require, but in the days when such a form was raised by laborious hand-work only, it demanded admiration and respect.

The only equivalent we have to these old urns to-day, are the brewers' utensils, which seem to have altered but little in style or form for a long period. There are one or two firms who still make these old-fashioned measures, and for those who love good craftsmanship, these things are quite fascinating. It is a fearful sort of joy, however, for one always fancies that the work is too honest and straight-forward for these days, and that the ancient shapes and methods must give way in time to some cheaper and quicker process, and this good craft be left behind in the ghostly past with such old friends as the pattern-makers, the horners, and others. All who have not seen and admired these things, which can generally be seen on the brewers' carts in the streets, should hasten to do so, lest in a week or two they are all swept away and superceded by some modern machine-made article, made in New York, or more likely, Germany!

In beating up small ornamental work in copper, especially when it is as small as silversmiths require, it is put down on a cement made of pitch and other ingredients. This is melted every time the copper is put down, and, besides holding the metal tightly, offers a slightly yielding material against which to hammer. If, when the copper is on the pitch, we take a punch and make a straight line—indented of course—that line will come out on the face of the metal as a clean, sharp line. If, however, we do not put the copper on to any cement at all, but make the indented line on it, as it lies on the wooden bench, it produces a very different effect on the face side. Now the line shows indefinitely, and, instead of the metal being raised just where it was struck, the surrounding part is dragged up too. If an effect were desired between these two extremes, one should place the copper on a half-way material, such as stiff clay or modelling wax. The result of the beating would also be half-way—neither too precise a line nor too blurred.

It will be seen that these three courses are likely to give a considerable range, especially where the metal-worker has some artistic capabilities; but the usual way, which is generally the worse way, is to first trace on the face side of the copper the whole design, with what is practically an incised line, and then slightly bump it up here and there from the back. This is the cheapest and readiest way of getting an effect. But to get the best quality out of copper or any other metal with the repoussé treatment, let the face-side have the least possible amount of work—none at all, if it can be helped.

This point is an all-important one architecturally, for this reason: That where ornamental copper would be used in a building as a decorative panel—a tablet with lettering or otherwise—it should "carry," as a sculptor says—that is, the design should look clearer at a little distance off than it does close to. A design which is clearly and sharply cut and looks very well close to will not show to advantage at a distance, will not "carry," in other words, while a design that looks somewhat blurred and indistinct close to becomes quite sharp and clear ten yards off—it

"carries" exceedingly well. This is one very good reason for putting all the work possible on the back of the metal, leaving it somewhat blurred in front, and not "finishing" it, as they say, by chasing and putting a clean hard line around everything.

One objection that is made regarding copper when used for decoration in a house is that it requires cleaning, or it loses its chief beauty. Well, there is some truth in this, but it is not altogether correct. In the first place, if it be required to keep its own colour, it can be lacquered; and this, if judiciously done, will last a very long time, and is both easy and cheap to renew when necessary. But copper that is not lacquered—simply left and dusted in the ordinary way by the housemaid when the rest of the house is dusted—will take a most delightful colour in time. When the word "bronze" is used most of us think of a dark, almost black, material, while its real colour is a pale gold, paler than the copper that so largely composes it.

If, then, we are content to let bronze assume a "patina"—nay, hasten it chemically—let us be content to let copper do so too, and we shall get a colour that is as rich as chemically-coloured bronzes. One of the most beautifully-coloured pieces of copper I have ever seen, and no Japanese ever approached its patina, was a large brewer's copper vessel, such as was before spoken of, that between constant rubbing with a cloth and fresh spillings of liquid, had assumed a wonderful olive green patina, hopeless to reach artificially. If, then, you have copper in a house and are not minded to have it cleaned or lacquered, let it be dusted with a soft cloth and it will require no more.

Yet another means of preserving copper, and, by the way, that the Japanese use. The most familiar example is the so-called liver colour that was produced on our old-fashioned tea-urns—a dark brown chocolate colour that took a high polish. This is produced artificially and with little difficulty by means of chemicals of different mixtures, called "pickle" in the workshop. Different pickle give different colours, from a pale saffron gold, a whole range of brown, occasionally a rare olive green, to Indian red, but never in England reaching the beautiful lobster red that the Japs have found out.

There is a whole range of colours that once produced on the copper are not only themselves permanent, but act as a varnish in preventing an action of the atmosphere.

The importance of this fact showed out recently in the case of a memorial-tablet in a church which was desired to be of copper, the objection being that when the immediate friends had passed away, it would become uncared for and soon reach the dingy stage, a condition that the more familiar marble never reaches. It seemed difficult to find a metal that would do any better than copper, which was wanted, but with the aid of such an artificially-produced patina, the difficulty is removed, and there is no reason why copper should not be used. For any case where an inscription or lettering in any form is wanted, it may be said that no other metal opens out such chances as copper, especially if treated in an artistic manner, provided, of course, the design and execution is not left to the tender mercies of the usual commercial person.

One can only refer to the lamentable state that mural brasses have reached in our time, and suggest that the artistically treated copper offers an escape from such terrors, especially if the tablet be within reach of an occasional duster, giving the slight amount of polish that makes the use of lacquer or other preservatives unnecessary.

One other treatment of copper must be noticed before finishing, and as artists we shall feel it to be treading on unholy ground—electrotyping. Sometimes one thinks that this must be a fine process and a nineteenth-century blessing, while the next electro one comes across the whole thing is condemned bag and baggage. A clever mechanic will turn out in electro a copy of a repoussé dish that an expert could not tell from the original, unless he looked at the back. This is a thing to be thankful for, this tell-tale back of the electrotype, otherwise there would be no telling at all, so faithfully does it reproduce every mark, every touch of the hammer or chisel. It is interesting to know what is going on around us, and it may not be out of place to relate a little incident that occurred recently. In the workshop of a clever electrotyper a specimen of work was brought in to show. It was a small electric-light table-standard about 9 in. high, of interesting design, and apparently highly chased, in copper, with a good chocolate-brown patina, and mounted on a small oak plinth. "Now this," said he, "is electroed from a fine old Sheffield plate candlestick in the South Kensington Museum, and we have an order for a quantity. We have acquired the right to reproduce the things in the museum, and, with our skill in this line, there is nothing that we shall not be able to copy."

Now, frankly, if I had seen this piece in a shop I should not have been able to tell how it had been made, because it had been electroed in two halves and soldered up, *so that the back could not be seen*, and on the face only gave the evidence of highly-chased work and most careful finishing.

One may say, if this has *exactly* the appearance of the correct thing, it must be as good. Most plausible, but most weak! There is often a sorry mind behind a fair face, and the fact that you can mechanically reproduce a good thing a hundred times, makes it an hundred times worse. A good piece of copper or any other metal work, on which an artist has spent time and care, will always be valuable; and equally the most exact reproduction of it, especially by any mechanical means, will always be valueless. Seriously and calmly, this form of copper work is the only one that may be called unlawful, and if we do not leave it altogether alone, it should only be used for the commonest purposes.

We have now considered some of the good points and some of the bad points of copper, and the question naturally arises, To what use can this metal be put with advantage *to-day?*

Well, *externally*, and excepting in the case of roofing, copper is not much used. There has been a mild desire to cover the door of a church or mansion with it occasionally; in the case of the former with repoussé work, which we may imagine as capable of having a very rich effect. Sometimes one sees the name of a tradesman in high-relief letters in copper or, a name plate by a door, in both of which positions they seem to get well rubbed, and invariably catch the eye as we pass. In one or two cases sheet copper has been largely used, in conjunction with wood-work, in the decoration of big West-end public-houses; and although [here] it looks *appliqué* and cheap, that is not the fault of the copper.

It may be well to take this opportunity of saying how difficult, but how important it is, so to use sheet copper, or any other metal, that it does not look thin and papery, and as if cut out with scissors. Of course sheet-metal, unless of some thickness, is frequently cut into shape with shears, but if this is apparent when the work is finished the effect is disastrous. All the durable and hard qualities of the metal seem to disappear, and the thin, fragile undurable character asserts itself unpleasantly. For a glaring instance of this misuse in sheet-metal, though in iron, we have only to turn to the much-vaunted iron railing from Hampton Court Palace, in the South Kensington Museum, reputedly by Huntingdon Shaw.

One would not be understood to mean that sheet-metal must be made to look like cast, or any other form of metal, only equally it must not be made to look like paper. If any metal-work looks thin and poor, not solid and strong and metallic, then the designer is no artist, and the workman no craftsman—both have wasted their time and chance. Beyond these one or two things, then, one does not see copper used externally; though, at least, wherever sheet-brass *is* used, there also certainly sheet-copper *may* be used. Indoors it is different, especially in domestic work. For a good, comfortable, homelike, and cheerful appearance in drawing-room, dining-room, or kitchen, one may safely say copper cannot be beaten. Near a fireplace, and kept bright, it has a cheery glow that rivals the fire itself; the mere fact alone of its being kept so bright is a constant and recurring announcement of housewifely attainments. A polished copper hood to your drawing-room fireplace, even though the chimney does not smoke, will be an evidence of taste and sensibility, that even a Tottenham-court-road suite of furniture would hardly dim, while anything like copper-panels let into one's own mantelpiece (to use an appalling though familiar word) would be a joy for ever.

There is hardly any interior metal-work that, if one desired, might not be done in copper, saving, perhaps, poker and tongs; and even the former of these I once saw made out of a huge copper bolt of some old Navy ship. Hinges, too, one would not use it for, as it would wear too quickly; but we can use the gun-metal alloy where the actual wear and tear comes, and rely on our old friend for the ornamental part.

For finger-plates, a handsome set of door furniture in bright copper will do more to redeem a drawing-room from depression than the most gorgeous wall-paper, and the sparkle of electric lights in copper reflectors and copper stands will be only second to gold itself.

To-day, no lady who had any self-respect could live for a single day if she had not a more or less ancestral copper coal-scuttle, while two or three years ago, to be without an equally ancestral warming-pan hung on the drawing-room wall was almost a punishable matter.

Be sure there is a future yet for sheet metal-work, and that largely in copper, in this country. The Dutch have had their turn, and it lasted several centuries. For ourselves, we seem so far to have inclined more to the cast or forged work, no doubt due to the "solidity" or "stolidity" of the British character. But, personally, I would not hurry the time of popularity for copper by a moment; rather it should be deferred, lest that mammon of unrighteousness, "the trade," lays its cold and grasping hand thereon the sooner, thereby making it the hateful thing that brass has become. Let us talk about it quietly among ourselves, spend time lovingly on the working of it, and possess our souls in peace.

Mr. F. T. W. Goldsmith proposed a vote of thanks to Mr. Nelson Dawson for his paper. He had almost hoped that Mr. Dawson would have mentioned the beautiful combination of the enamel with copper, because it seemed to him that that gentleman succeeded in producing not only exquisite shapes in copper, but also beautiful colours in the enamel, which the copper seemed to set off singularly well. For hammered work, few materials were so suitable or lent themselves so readily as copper, and dishes, &c., of that metal formed most beautiful objects in any house. The hanging of such ornaments over the homely mantelpiece redeemed the room absolutely from vulgarity if they were only kept bright and designed with taste and the simplicity which the material seemed to demand. In the paper that had been read happy allusion was made to the sparkle of electric lights in copper reflectors looking like pure gold. That was precisely what electric light in some cases ought to be. If a beautiful electrolier, simple in character, could be executed in copper, so as to give the effect Mr. Dawson suggested without the obtrusiveness of the electric light, he considered that something would be gained. That was a purely modern aspect of copper, and it seemed to him that if workers in copper could grasp the idea of the essentially modern fitness of the thing, a great deal would be done. Copper was a material which lent itself to simple and broad effects more easily and readily than any other. Mr. Dawson had referred to the question of its substitution for brass-work in churches. They all agreed that, next to the regulation memorial window, there was nothing more distressing than the ordinary memorial brass. That reference was to polished copper-work. He had seen copper used in more than one church—though he had particularly in his mind one which was designed by their President, and was now being restored under that gentleman's able supervision. In that church there was an angel in the chancel with extended wings of green copper. The walls were of a soft coloured stone-work, the roof oak, of a beautiful tint, and the effect which these extended copper wings had was really most beautiful. That little church was at Stanstead Montfichet.

Mr. M. Garbutt seconded the vote, and remarked that one of the first things said by Mr. Dawson was a rude shock to a long-cherished belief of his. That gentleman told them that the Greek helmets they saw were of sheet metal, beaten into shape, and also that the ancients used sheet metal for a long while in that way before casting in bronze was introduced. He (the speaker) had an idea that the ancients cast the greater part of their bronze, finding that bronze was an easy alloy to make, and that in copper they could not cast. That they did cast was pretty well proved by the existence of some of their moulds of axes, &c. He had recently read of one of those moulds being found, together with an axe that had been cast in it, and it could be seen that the edge of the axe had afterwards been hammered — probably to harden it. In connexion with the work of Shaw at South Kensington, he might say he understood that in a great many modern samples of sheet-iron work, some of the sheet "iron" used was sheet-copper. He had had evidence of one of the leaves in one of the Shaw screens having been scraped and found to be copper, but he did not know that it was an original leaf—it might have been a restoration. He was very glad to hear Mr. Dawson say a word in favour of the beautiful patina which copper assumed. He (Mr. Garbutt) had lately seen an

example of a very deep crimson patina, which was very beautiful, and quite different from the lobster and all other red patinas he had before met with.

Mr. T. Stirling Lee considered that copper was hardly second to gold in colour, and as a material for decoration it was to be highly esteemed. It would readily be seen why the Greeks used bronze instead of copper, because for figure-work something more durable than copper was wanted. Copper wore quickly, so that directly a man had modelled a carefully-studied figure, if he wanted to put that into a hard material, he naturally turned to bronze. The first thing the members of this Association wanted to look at in copper was the fact that in optics and architecture they found its sphere for decoration. In any room copper was the high-light of a scheme of decoration. If they had a copper scuttle their eye was bound to light upon it—or a finger-plate was noticed as a spot of rich colour and high light. But in using copper in that direction they must be very sparing with it. Then came the question as to what was the best treatment for copper, and in the matter of repoussé work he quite agreed with the view expressed by Mr. Dawson. Where there was repoussé treatment, it was certainly best when executed without the line of which the reader of the paper had spoken, for it "carried" much further than if there was a hard line all round the work. That was especially so in the case of a tablet with lettering. It came to this, that the proper treatment for repoussé copper was a light and shade treatment. Of course, where the design consisted of a line, that was quite different; they came then to another treatment. But sheet work, cut with scissors or shears, was almost bound to look like so much twisted paper, though when the sheet copper was taken, and an outline was drawn artistically upon it, and it was afterwards bent about, it might lose its paperiness. They could always tell a good metal-worker by whether the copper, when treated, looked like paper or not. Probably the most beautiful work done in the direction of patinas was that wonderful lobster-red patina. There was nothing more beautiful to clean than copper. With just the friction caused by rubbing a hand over the surface, the quality of the metal was brought out, and the next best thing with which to rub it was a little cotton-waste. With that little attention, copper would keep all its rich colour. Only the previous day he was in the Academy, and, looking at the gold and silver cups in the Old Masters' collection, his eye was instinctively drawn to those things which were simply bossed. It seemed to him that the bossy treatment brought out the full quality of any metal. Handling their metal with a hammer, they secured a perfect bossy treatment, and for that no metal was better than copper.

Mr. F. W. Pomeroy said there was little in Mr. Dawson's paper that an artist could disagree with, and much that would afford him food for reflection. He found that the Greek χαλκός, and Roman *aes*, were words which were identical for both copper and bronze, and, also, as far as was known, for the mixed metal called brass, so that it was rather difficult to discriminate from written descriptions which was cast and which was simply sheet-metal hammered over a mould. One had only to go as far as the bronze rooms of the British Museum to find wonderful examples of metal workers of antiquity. He was recently looking at a picture by the Venetian painter Carpacio, and could not but observe the wealth of small articles of bronze which were distributed about the room—candlesticks, statuettes, and portions of furniture—and this sort of thing was noticeable in most of the early Italian and German pictures of interiors. Mr. Dawson's "Encyclopædia" informed him that copper was second only to iron in its malleability; he had probably overlooked gold in his enthusiasm for his beloved metal. They doubtless all remembered the Jubilee trophy, by Alfred Gilbert, the sculptor, presented to Her Majesty by the officers of the Guards. Well, the statuettes on this work were made of silver and covered with draperies hammered from sheet-gold; the armour was of steel, the faces being covered with enamel. The structure was mostly hammered work and the treatment of the edges was delightful. It had no feeling of thinness or that papery look which was so unpleasant in most of the modern goldsmith's work. In fact, it stood alone as an example of what might and could be done in the nineteenth century if the right men were selected. Referring to electrotyping, Mr. Dawson disparaged its use entirely, but it reminded him (Mr. Pomeroy), that it was used in original work as a decoration for doors at no less a place than South Kensington Museum. Also, that a series of reproductions by this process was collected in the museum. They might note the celebrated gates of the baptistry by Lorenzo Ghiberti, the gates from Pisa, the many other interesting works of smaller size, and this means of using electrotype seemed to him very valuable. Electrotyped metal did not "carry" like beaten copper, and therefore did not render itself so readily for decorative colour purposes, but he thought that burnished copper should be used sparingly. In further remarks Mr. Pomeroy expressed regret that so little modern work from our own artists and craftsmen decorated the drawing-rooms of the present day, and he went on to ask why they could not have a more extensive use of metal in their architecture? They had the material at hand, and wealth and knowledge to work it, but unfortunately everything hinged on the price. Buildings were cut and pinched for the sake of a false economy. Many of their buildings were painfully starved—the walls, timbering, stone-work, and joinery; but there was also a disproportionate amount of cheap and ugly ornamentation, the effect to the eye being that of an overdressed individual. He thought they might congratulate themselves on the fact that Mr. Dawson had given up, to a certain extent, his water-colour painting and turned his attention to the making of things beautiful in copper.

Mr. Owen Fleming said that Mr. Pomeroy had asked why they did not use more copper in their architecture. Was not the reason because in their early days, as architects, they did not think about copper much at all? He never remembered any demonstration on copper at all at Great Marlborough-street. In the course of their training they should be in close connexion with such materials, and then when they were designing they would involuntarily use metals and other means of decoration that now they hardly thought of. He thought they must look forward to having schools where the best craftsmen in London were engaged upon the different materials, and where the students of architecture could see the work done and do some themselves. He, with Mr. Goldsmith, would like to have heard a little more about enamelling, which added to the many charms already possessed by copper. The speaker referred to a beautiful chimney-piece in Mr. Ashby's house in Cheyne Walk—"The Old Bagpipes" public-house — made up of a number of rows of copper tiles, with here and there an enamelled tile in appropriate colours. The effect of the whole mass of copper, thus relieved, he said, was astounding. He supposed it was impossible to use copper in London for the outside of buildings, but was there no way of treating it so that it could be utilised! The copper roof over the market in Borough-road had gone perfectly black. If they could get it green and rely upon it remaining so, there were many directions in which copper could be employed with a superb effect.

The President remarked that he regarded it as one of the most helpful and pleasing signs of the times that well-known artists were drawing nearer to architects. Not very many years ago the execution of what were regarded as pretty pieces of sculpture to deck a lady's boudoir or hide behind some curtains seemed to be the acme of the sculptor's art in this country; but now they found a younger generation of sculptors growing up who dealt with their art in a broader manner, and who were going back to the views of the Greeks and Mediævalists, that sculpture and architecture must go hand-in-hand if they were to get the best effects. They had now a most admirable, refined, and forcible painter turning his attention to metal-work and helping on the cause of their own art. In reply to a question which Mr. Dawson put as to marble becoming poor-looking in course of time, speaking entirely as an architect he was bound to say, to use marble out of doors in this country was entirely and absolutely a mistake. He wished a law could be passed that marble should not be used in an English churchyard. As long as marble monuments were looked after, they remained a cold white, with very little that was interesting about them, but as soon as they began to be neglected they simply stained a dirty green, as if pea-soup had been poured down them. Very much the same might be said of marble even in a covered situation in London—it soon got sooty and dumsy. Even indoors the commoner forms of Carrara marble would never be a suitable material for monumental work. On the other hand, he was inclined to disagree with Mr. Dawson that polish was an advantage with copper—or, rather, polish sustained by lacquer. It might be perfectly true that there were lacquers which would last and preserve the polish upon metal, but they were so difficult to find—in fact, he believed they could not be found outside Japan—that in the ordinary course of the use of metalwork they could not and should not rely upon lacquers. Mr. Dawson and a few other notable workers in metal might be able to find them, but they could not ordinarily be obtained. And if a lacquer failed in the least degree it was then that they got the horrible brass effects, to which they were too much accustomed in churches. If brass were left entirely alone, it, like copper, would become an exceedingly good and pleasant colour, though in course of time there might be a slight tendency to blackness. But lacquer went first into black streaks and then got blacker and blacker, but always in a spotty form which was most distressful. Therefore, he thought they might answer Mr. Dawson's question by saying that unlacquered metal for monuments was certainly superior for lasting, and gaining a beautiful effect in course of time than marble. The one objection to metal was—although he hoped they might not have revolutions and "reformations" in the future—that it was likely to be stolen and borne away. The President next pointed to the simplicity in ornament to which copper specially lent itself, and then proceeded to refer to the use of the metal for roofing purposes. It might be taken, he said, as a matter of fact, that in a smoky town which was not near the sea, copper so used would go black. He could not go into the chemical details as to why that was so, but he would state that some years ago he managed to get hold of some excellent samples of the beautiful copper roofs at Dublin—and there was no place in these isles where copper gave such a beautiful colour as in that city. These he had analysed, as well as some copper from a new spire at Croydon, which had gone quite black. The result was that the Croydon copper was shown to be the purest, and that the impurest copper used in Dublin had gone the best colour. That seemed to point to the conclusion that it did not matter very much what the copper was, but it mattered a great deal where the situation was. In reference to the question of sheet metal looking like paper, he would suggest that if they rounded off the edge of the metal, whatever might be the thinness, it would not look nearly so much like paper as if they kept the edges square. He could not believe Mr. Dawson was quite right in telling them that electrotyping would produce exactly the same effect as the original hand-worked article. It might be true, but he hoped it was not—he certainly did not think it was. He believed that to those who could see there would always be a certain difference. In closing the President referred to the large, broad-minded view of the architects' future which Mr. Fleming set before them, and which he hoped they would bear in mind, so that in the event of any such proposals coming to a head, or being placed before them, they would receive the consideration which they deserved.

The vote of thanks having been carried unanimously,

Mr. Nelson Dawson acknowledged the compliment. Exception, he said, had been taken to a remark of his with reference to sheet bronze being used by the ancients, before the art of casting was invented; so, in support of what he had said he would draw attention to a statuette in the British Museum, being the earliest representation of a figure in the round. It was an archaic little figure. It was the representation of a female from the waist upwards, and it consisted of a wooden core, over which were thin plates of beaten metal. The statue was so ancient that it was quite pre-historic. It was pretty well-known when casting was introduced, and he thought 800 B.C. about fixed it. He believed it was introduced either from Egypt or some of the more eastern countries. It was not really discovered in Greece, but introduced. As far as cast-bronze axe-heads went, archæologists were at a loss, and did not know much about the matter, but they certainly had found the moulds in which those axe-heads were undoubtedly cast. But there existed also these figures which were made with plates of beaten metal, and they must take the two facts as they stood. The brewer's utensils, to which he had referred, were, perhaps, not quite so large as those which another speaker had mentioned—8 ft. in diameter—but he might add that the ball on the top of St. Paul's, some 15 ft. in diameter, was hammered up out of two pieces of sheet-copper and rivetted together, the thickness of the metal being less than ¼ in. The

Sketches at Caudebec. By Mr. E. Turner Powell.

crimson red, to which reference had been made, he himself accidentally obtained on one occasion, and it really came from the fire. The lobster-red of the Japanese which he believed Prof. Roberts Austen had tried, but so far had failed to discover by analysis, was not quite the same sort of patina as the beautiful crimson or scarlet-red. Mr. Dawson then explained how recently he took a piece of copper from the fire, and it was a deep, rich crimson-red, but he added that, as a result of the experiments afterwards made he was bound to come to the conclusion that that beautiful colour only came with a certain heat, and then only the first time of heating. That red, which copper became, was a sort of half-way stage towards the very unpleasant blackish green colour that came finally, and if they could heat the copper till it reached that half-way stage they would get the colour in patches on the metal, but it would not be equally beautiful all over. Of course, patinas were very interesting and beautiful, and might be usefully employed, but he was of opinion that they—and especially Japanese patinas—detracted from the artistic value of the metal. If they took a piece of copper that had a patina, they could not tell exactly what it was; it might be painted ivory, or any one of half-a-dozen other substances. Patina, in the way the Japanese used it, was a sort of incrustation, and he did not think it was a thing that we could be altogether sure about using. If we could preserve copper in any other way, he should prefer it to any patina that could be got. But the scarlet red of which they had been speaking was so much thinner than the Japanese red, that, if it could be produced, it would be very much more valuable; and was certainly very durable. It was interesting to remember that when a patina was produced on copper it stopped the action of the air—it really acted as a sort of varnish. As a chemical authority had said, most patinas that were produced chemically were not cumulative, *i.e.*, they did not continue acting. Mr. Lee had said that copper wore very badly, but that was because it was rubbed a great deal; bronze also wore very quickly when it was constantly rubbed. They all liked to see bronze a nice, dark, rich colour, and they should be content to let copper go its own colour. Copper had not been much used in big figure work, but in England he might mention such a well-known example as the tomb of William de Valence in Westminster Abbey. That was a life-size example of where sheet-copper was used. He was glad Mr. Lee was able to support him with reference to the "carrying" power of repoussé work; it was a most important quality, especially to sculptors and architects. Sharpness and clearly defined sort of work were no longer considered absolutely requisite, and he thought it was a very good thing. Referring to external copper, the speaker said he had always had the idea that the spire of Battersea church was rather a fine colour—it was a beautiful green, although surrounded with chimneys and factories and chemical works. He then went on to explain that Japanese copper took the colour so well, possibly because it was impure; that placed on the English market, being largely used for electrical purposes, was as pure, chemically, as it could be made. Japanese copper would certainly take more irregular colours than English, for, being so impure, it really amounted to an alloy, and the same pickle would act very differently on the different alloys. In the case of copper roofing or frieze on the outside of a building, he thought that if an architect desired to get it a good colour he would simply place it in position and then give it a coat of vinegar, common salt and water, or any common acid. It would soon turn green, but the difficulty was not to get it too green. If they did not want it such a bright green as they perhaps got it in the first instance, they should rub it with a moist hand or a slightly greased rag. It would then turn a dark olive-green, and would last very well. As to lacquer, even the best was not very nice, and if they could do without it they should. On the point raised about craftsmanship broadly, in connection with architects, artists, and art workers, it being urged that there should be a school of craftsmen, he must say he thought architects had too many things to think about, and as an art-worker and one who had talked the matter over with other artists and art-workers he thought the best thing for an architect to do was to have artists around him and work in conjunction with them, not as a craftsman himself but as one of a group of which all members should be equal. Of course the architect had all the head-work, or most of it, and he should never grudge the architect his work if the architect did not grudge him his. From what he could see it seemed feasible that architects and art-workers and craftsmen should work well together, and they could do so without treading on one another's toes at all, and he thought that policy would give the best results.

The President announced that the next meeting would be held on February 7, when Mr. Sydney H. Wells, the head of Battersea Polytechnic, would read a paper on "Technical Institutes."

SKETCHES AT CAUDEBEC.

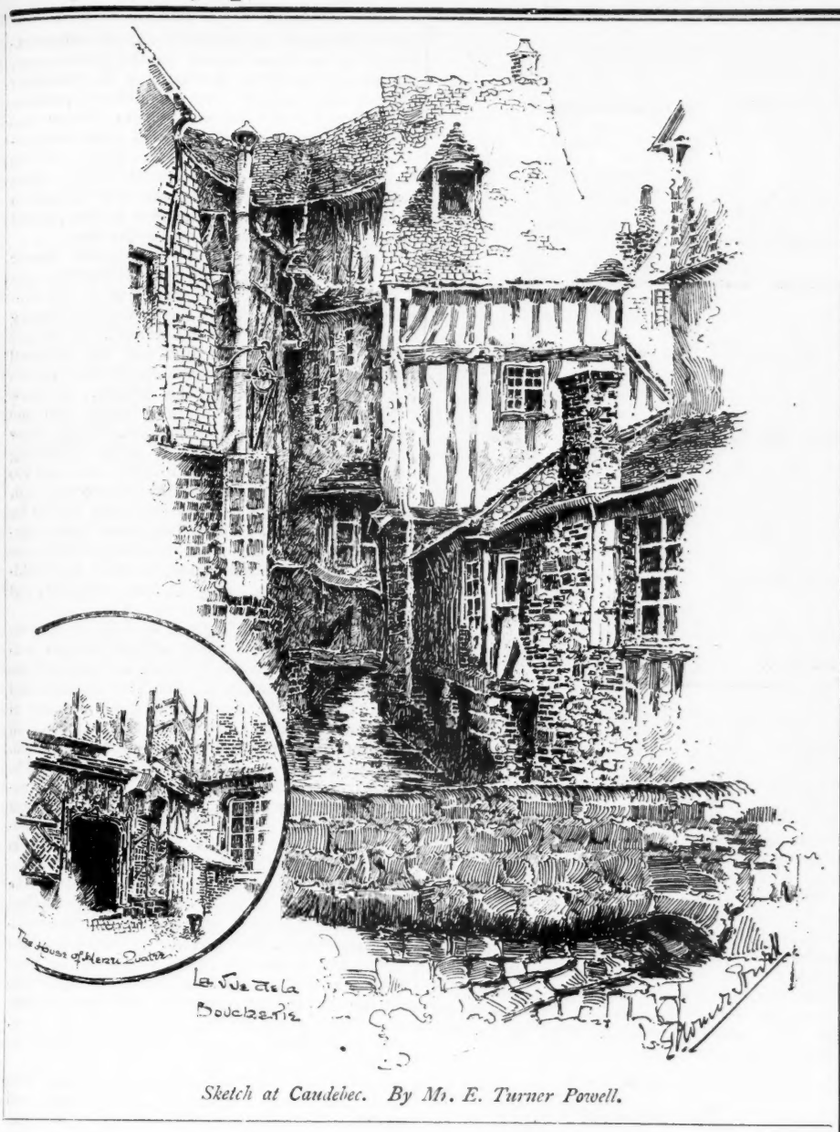
THESE sketches, by Mr. E. Turner Powell, belong to the same set of "Sketches at Caudebec," three of which were published, along with a short article by the artist, in the *Builder* for January 4 of this year; we had not space to give the whole set in that number.

These three sketches illustrate very well the unmodernised half-timbered houses which, as Mr. Powell observed in his remarks, give Caudebec so much of its interesting and picturesque character.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday at the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans for Public Works.—Upon the recommendation of the Finance Committee, it was agreed to lend the Battersea Vestry 1,500*l.* to defray the cost of a footway improvement, Lavender Hill; the Hackney Vestry 1,890*l.* for paving works; the Vestry of St. George-the-Martyr 1,700*l.* for a similar purpose; the



Sketch at Caudebec. By Mr. E. Turner Powell.

Westminster Vestry 1,100*l.* for sewer works; and the Wandsworth District Board 1,500*l.* for the purchase of a site on which to deposit road scrapings.

The Water Question.—Mr. McKinnon Wood brought up the joint report of the Parliamentary and Water Committees, which was as follows:—

"The Staines Reservoirs Bill, the New River Company's Bill, and the Southwark and Vauxhall Company's Bill seek powers for the companies to obtain the supplementary supply of water required for London by drawing on the river Thames and its tributaries, and by pumping water from Hertfordshire and Middlesex. They propose that the concession should be granted to the New River, Grand Junction, West Middlesex, and Southwark and Vauxhall companies. The reports of Committees of Parliament and the resolutions of the Council alike indicate that powers of water supply for London should not remain in the hands of commercial companies. We have considered these Bills in connexion with the Bills of the Lambeth and Chelsea Companies, which stand 'suspended' from last Session, and find that, together with those Bills, they involve an addition to the nominal capital of these companies of 4,300,000*l.* In considering the question of the source of water-supply, we are reminded that a further addition to capital of 1,190,000*l.* in respect of the Thames valley supply is authorised under the Southwark and Vauxhall and West Middlesex Companies Acts of 1894, and that the New River Company's Bill of the present session is so drawn as apparently to authorise the issue of their capital without limit of dividend. The total expenditure which would thus be authorised would appear to be at least 5,490,000*l.*, which might be very largely exceeded under the New River Company's Bill if passed in its present form. The Bills are so framed as apparently to provide for arrangements between the companies named and others, so that they must be regarded as a definite attempt to obtain for the water companies such new statutory powers as may enable them for many years to come to escape coming under the purview of Parliament and the local authorities, and we are advised that the result of the companies obtaining the powers now sought would be a large addition to the cost of purchase. We are not yet prepared to advise the Council as to the course to be adopted in regard to all the provisions of these Bills, and we propose immediately to give the matter our most careful consideration. But having considered the general effect of the Bills, taken in conjunction with each other, we are strongly of opinion that they must be opposed by the Council, and we accordingly recommend the Council to adopt the following resolution:—

'That the Council, while divided in opinion as to what authority should be intrusted with the administration of the water supply—a matter which can only be finally decided by Parliament, and need not therefore be settled at the present moment—is of opinion that the water supply should be under public control, and not in the hands of private companies, and resolves to petition against the Bills at present being promoted in Parliament by the metropolitan water companies, and to oppose these Bills in so far as they are prejudicial to the interests of the ratepayers and water consumers, having special regard to this policy of the Council.'"

Lord Onslow said that all parties on the Council were agreed that the undertakings of the water companies should be transferred to a public authority, though there was a difference of opinion as to what should be the authority, and what should be the price paid for the undertakings. But the recommendation was arrived at by an overwhelming majority of both parties on the Committee.

Mr. Stuart, M.P., pointed out if any part of the companies' proposals were necessary to meet the immediate wants of the customers, and prevent the recurrence of such an experience as the East End had gone through, that special point would be carefully considered. But apart from that consideration, the Bills would have to be minutely opposed, because it was essential that the policy of purchase should not be financially damaged.

The recommendation of the Committee was adopted *nem. con.*

The Protosed Welsh Supply.—Mr. Idris brought up the report of the Water Committee, embodying the two following recommendations:—

"(*a*) That the Parliamentary Committee, in conjunction with the Water Committee, be instructed to place before Parliament the views of the Council in favour of purer sources of supply, and, in doing so, to indicate the various sources of supply in Wales which have been under consideration.

(*b*) That the Water Committee be instructed to continue the surveys, &c., of the whole of the Welsh scheme, which they are carrying out under the instructions of the Council, and to prepare forthwith for Parliamentary deposit in November next that portion of the project deriving its supply from the Usk areas, with the necessary conduit to London."

Amendments stood on the paper in the names of Colonel Ford and Lord Onslow. Both gentlemen agreed to withdraw them if further information were promised; and Mr. Idris thereupon consented to take back the report with a view to bringing up another giving additional particulars of the scheme.

Combined Drainage Bill.—The Main Drainage Committee reported as follows:—

"On February 12, 1895, the Council resolved to apply to Parliament for an amendment of the definition of the words sewer and drain in the Metropolis Management Act in the way desired by the local authorities with whom the Main Drainage Committee had been in communication on the subject. It was at the same time referred to us to prepare a public Bill and take such other steps as might be necessary. A Bill was prepared and circulated among the local authorities, who arranged for a conference to be held, to which representatives of the Council were nominated by the Main Drainage Committee and by us. Several meetings of the conference took place, and in the result a Bill was generally agreed upon and forwarded to us with a request that it should be adopted by the Council, with such revision as the Parliamentary agent might advise to be necessary. We have received numerous letters from the local authorities endorsing this view, and asking the Council to endeavour to pass the Bill into law as speedily as possible. The agent has accordingly revised the Bill, which has been settled by counsel, and it seems to us in its present form to give effect to the wishes of the local authorities. We have directed a copy to be sent to each member of the Council, and we recommend—

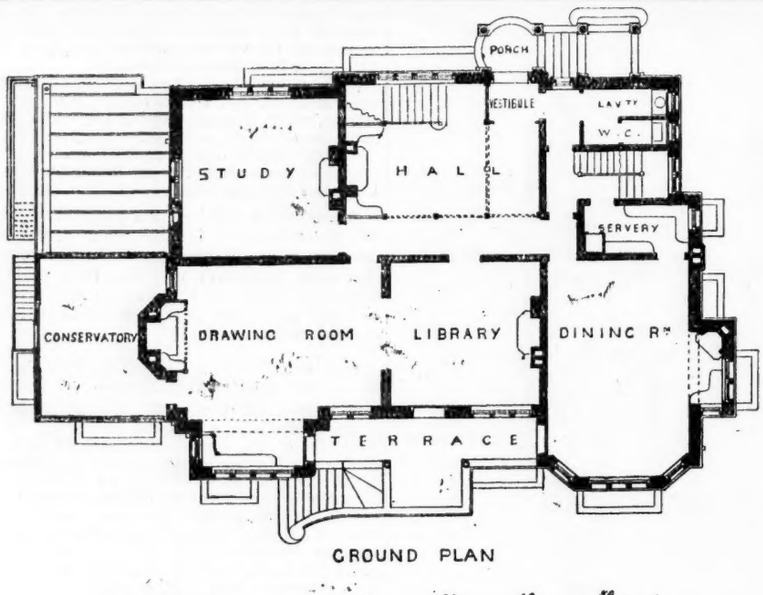
'That the Bill entitled "a Bill to amend the Metropolis Management Acts with respect to sewers and drains," be approved, and that the committee be instructed to arrange for its introduction as a public Bill.'"

The recommendation was agreed to.

Horseless Vehicles.—The same Committee also reported:—"We have considered the resolution passed by the Council on December 17 last, requesting us to approach the Government with a view to the reintroduction in the Session of 1896 of a Bill to amend the law with respect to the use of locomotives on highways, and have directed a letter to be addressed to the Government on the subject. We have also requested the members of the Council, who are members of the House of Commons, to use their best endeavours to further the desired legislation."

Sanitary Condition of Lambeth.—The Public Health and Housing Committee brought up a report on the sanitary condition of Lambeth, from which we take the following extracts:—

"On January 29, 1895, we reported to the Council that the Medical Officer of Health had prepared a revised return giving particulars as to the Sanitary Inspectors employed in the several sanitary districts of London, and that we had had the return printed and published, and had sent a copy to each Sanitary Authority. In those cases in which the sanitary staff, in proportion to the population, was considerably below the average of London, we communicated with the authorities concerned, and we are glad to say that in several instances the staff has been increased. In the case of Lambeth, however, in which the return showed that there were 34,400 inhabitants to each Inspector, as against 19,320 in the whole of London, the Vestry replied that, though the number of Inspectors in the parish might be less than the number in some of the other London parishes, the Vestry was not aware of defects in sanitation which were not duly attended to by the present inspectors. In view of the exceptionally small number of inspectors in Lambeth in proportion to the population, we thought it desirable, on receipt of the Vestry's letter, that the Medical Officer should inquire into and report upon the sanitary condition of the parish. An inquiry was thereupon made by Dr. Hamer, one of the Council's Assistant Medical Officers of Health, and the following is an extract from the observations made by the Medical Officer in submitting to us Dr. Hamer's report:—'Dr. Hamer shows that for a proper understanding of the requirements of the district it is necessary to bear in mind that it is not homogeneous, that, in fact, broadly speaking, two separate areas have to be considered, differing widely from each other in respect of population and in respect of sanitary circumstances. Of these areas the southern, which is the larger, is occupied by a population living under conditions of comparative comfort; the northern, which is the smaller, is occupied by a much poorer



Mansion, Folkestone.

population, whose conditions demand an active sanitary supervision. . . . In view of the smallness of the staff of Sanitary Inspectors, it is not matter for surprise that Dr. Hamer's report contains ample evidence of the results of lax administration, manifested in the overcrowding which he found in numerous tenements, and in the neglected condition of houses occupied by poor persons. These conditions were especially conspicuous in the northern area, but the southern area also presented much evidence of want of supervision. A complete re-arrangement of the sanitary administration is undoubtedly needed to remedy these evils, and a sufficient staff must be provided to deal with the unwholesome conditions which abundantly exist throughout the district, and especially with the prevention of overcrowding which is more marked in the northern area. With an adequate staff it would be possible for the authority to undertake what it has not hitherto seriously attempted, a house-to-house inspection throughout the district, and it would then be possible to regulate by by-law those houses let in lodgings for which this greater power of control is necessary, and to obtain the information which is required for the effectual supervision of workshops. Dr. Hamer also directs attention to certain areas for which there is no effectual remedy but reconstruction and re-arrangement. Certain of these have already been brought to the knowledge of the Council, especially Salutation-place and Peers Cooperage. Among other points discussed in Dr. Hamer's report, I may especially direct attention to the need of providing a second disinfecting station and a shelter or shelters for the accommodation of persons compelled to leave their dwellings for the purpose of enabling such dwellings to be disinfected.'"

The Committee reported that they are considering what further steps it is desirable for the Council to take in the matter.

The Council having transacted other business adjourned.

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—The sixth annual smoking concert and exhibition of sketches was held on the 20th ult. by the Students' Sketching Club of this Association, when about 120 members and friends were present. An interesting collection of sketches and watercolours by various members of the Association, done during the last year, was on view, as well as a number of rubbings of brasses kindly lent by Mr. J. M. Dingle. The chair was occupied by Mr. Joseph Oswald, President of the Association.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—An ordinary meeting of this Society was held in the Town Hall, Carlisle, on Tuesday evening last, when Mr. S. W. B. Jack, architect, of Carlisle, read a paper entitled "Ventilation of Buildings." Commencing with a brief history of the science of ventilation, after describing the scientific and chemical details of the subject, the lecturer referred to some of the well-known cases where the lack of ventilation has proved most deadly to human life. The lecturer then discussed the generalities of the subject, and referred to the aw of diffusion of gases preventing the carbonic acid gas and its concomitant injurious organic matters, though heavier than normal air, from sinking to the lower portion of a room. Dealing with the actual methods, the lecturer stated that there were two of these — viz., automatic or natural, and mechanical; the latter again subdivided into the plenum or propulsion and the vacuum or extraction methods, but in most cases natural ventilation was preferable, in spite of the inherent defect that its action in mild weather was least when desired to be the greatest. This, however, could be remedied by means of gas-jets at the outlets and induced currents brought into play thereby. The lecture was profusely illustrated by diagrams and many models (extracting turret-heads, invisible roof extractors, wall inlets, and the Manchester ventilating stove and grate) supplied by various firms.

Illustrations.

MONUMENT TO EMILE AUGIER.

THE monument which has recently been raised in Paris to the memory of Emile Augier, a French poet many of whose works are familiar to English readers, is the work of M. Ernest Barrias, the well-known sculptor. It stands on the centre line of the Place de l'Odéon, and consists of a grey granite pedestal supporting a stele in red marble which carries a bronze bust of the poet. On the front face a bronze figure of a woman, symbolising "Comedy," writes on the pedestal the name of the poet. Beneath are the dates of his birth and death: 1820—1889. She turns her head towards another female figure, also executed in bronze, and wearing the costume of the heroine of one of Augier's best plays, "L'Aventurière." At the side a lyre and a palm-leaf in bronze are placed on the upper part of the pedestal. On the further side of the monument, towards the façade of the Odéon Theatre, a child figure or genius, seated on the pedestal, holds in one hand a whip, significant of Satire, in the other a mask symbolising "Comedy" but reproducing also, with a very faithful likeness, the countenance of M. Got, the celebrated actor of the Théâtre Français, who was the intimate friend of Augier and one of the principal interpreters of his works.

The monument, erected by public subscription, was inaugurated about two months ago.

NATIONAL BOHEMIAN MUSEUM, PRAGUE.

THE city of Prague, which, as the capital of Bohemia, is simply the principal town of an Austrian province, still assumes a certain independence in its proceedings as compared with other Austrian cities, owing to its historical associations as the former residential capital of the old kingdom of Bohemia. The Czech element predominates in the city, and in spite of the stringent government measures, makes itself felt in municipal matters. Practically all the new public works which have been carried out of late years can be described as purely Czech, and where expenditure has been vetoed by the government, the money has been forthcoming by voluntary subscriptions, collected by a committee of patriots. The new Czech National Opera House was erected in this way, and re-erected after its disastrous conflagration some years back, and the National Museum, or, as the Bohemians have ventured to call it, "The Museum of the Kingdom of Bohemia," which we illustrate in the present number, has been founded on similar lines.

The actual promoters of the museum scheme were Count Frantz Leibstein Kolowrat, and Count Frantz Klebelsberk, who headed the subscriptions and arranged for the provisional housing of the collections. The Municipality of Prague gave the promoters the site, and the National Bohemian Diet voted a considerable sum towards the expense of erecting the carcass. A competition was opened for the design, and the premium awarded to Professor Jos. Schulz, these preliminaries taking place in 1884. Building operations were commenced in 1885, and in 1890 the structural parts of the block were completed, and the decorations and fittings alone left to be gradually finished. These have now been practically completed, and the collections, which were considerably increased during the time the building operations were going on, have been duly put in position.

The Museum Building not only fulfils the requirements of the housing of the various collections, but is also the National Library and the seat of the Bohemian Academy of Science and Art. The building further fulfils the purpose of a miniature Pantheon, in which the statues of all who served their country well—from the Czech point of view—will find suitable positions. The block is intended to serve as a national monument, and the position accorded to it on a most prominent site, overlooking the main thoroughfare of the town from its upper end, is quite in accordance with this idea.

The plans explain the arrangement of the building, the main floor of which is approached by a steep carriage-way. On entering the vestibule, one side of the building is devoted to the offices and committee-rooms of the Academy of Science and Art, whilst the other side is given up entirely to the reading-room and the library. The upper reading-room is about 87 ft. long, whilst the main book-store measures 154 ft. by 36 ft.

In the back of the building room has been found for a small collection of pictures and models. Ample space has been given to offices for the custodians on this level, though their actual work-rooms are in the basement, in which there are also all the necessary store-rooms, packing-rooms, &c., and a large number of strong-rooms for the National Record Office.

The grand staircase has been so planned that the visitor can either approach the Pantheon directly or enter the ethnographical collections. The Pantheon, as will be seen from the plan, lends itself well to the arrangement of statues and busts as intended. The ethnographical collections take up two important galleries at the back of the building, and the archæological collections take up a third gallery at the back, together with three minor ones at the side, covering a superficial area of, roughly, nearly 8,000 square feet. The sites opposite the archæological collections are taken up by the botanical and geological rooms, another gallery being devoted to the latter on the front elevation. A gallery has also been devoted on this level to manuscripts, though we cannot quite understand why these have not been given a room next to the library on the lower floor, in place of the one devoted to pictures and models, which would certainly have been in a better position on the upper floor next to the Pantheon, where these manuscripts are at present placed.

There is little to say as regards to the construction, excepting that fire-resisting materials have been used throughout, and that the lighting is by electric light, and that much care has been given to the warming and ventilation of the galleries. For obvious reasons, national materials have been used throughout, and one is only surprised that the architectural treatment of the façades and the interior does not harmonise more with the national feeling. The Italian renaissance design which has been adopted, is quite out of place in Prague, where a picturesque treatment of the design in a Mediæval spirit would have been more in keeping with the surroundings and history of the city. Professor Schulz's excellent academical planning, with its symmetrical arrangement of galleries, halls, and passages, is no doubt very practical, but in an architectural sense we

should have preferred to see something essentially different in Prague.

We are indebted to Professor Schulz for the loan of the large perspective, from which our illustration has been taken, together with a set of working drawings from which the plans illustrated have been prepared. The cost of the building has been about 160,000*l.*

ALTERNATIVE DESIGNS FOR THE TREATMENT OF THE STUDY.

THESE sketches were prepared in order to illustrate three proposed schemes for the architectural treatment of a room used as a Study, in direct communication with the library, which is indicated through the arched openings or doorway beyond the main room. The styles adopted are those of the Late Gothic, the Renaissance, and the Italian Renaissance.

These sketches were included in the exhibition of architectural drawings in the Royal Academy of 1895. W. T. B.

MANSION AT FOLKESTONE.

THIS house is now in course of erection on the Leas for the Earl of Radnor, Lord of the Manor of Folkestone. The walls are of red bricks with Doulton's buff terra-cotta dressings. The top story is in half-timber-work, and the basement of Kentish rag-stone. The roof is covered with Tilberthwaite sea-green slates (Westmoreland). The illustration (the original drawing of which was exhibited at the Royal Academy last year) shows the view from the north-east. The accompanying plan shows the ground-floor accommodation. A large entrance and staircase-hall forms the central feature of the house from which the principal reception-rooms are reached. In the dining-room the fireplace ingle is separated from the room by an arch of Della Robbia ware, specially manufactured by the company of that name in Birkenhead, from the architect's designs. The colouring is copied from old examples, and is very pleasing. The ingle itself, with the chimney-piece and seats, is by Messrs. Doulton, and harmonises with the Della Robbia ware in tone.

The contractors are Messrs. Baker, of Folkestone. The electric lighting is by Messrs. Paterson & Cooper, and the ornamental iron-work by Messrs. Hart & Peard. The warming is by Messrs. Grundy. The building is being erected from the designs and under the superintendence of Mr. G. Hamilton Gordon, of Westminster.

NEW WINDOW, ST. PETER'S CHURCH, BOURNEMOUTH.

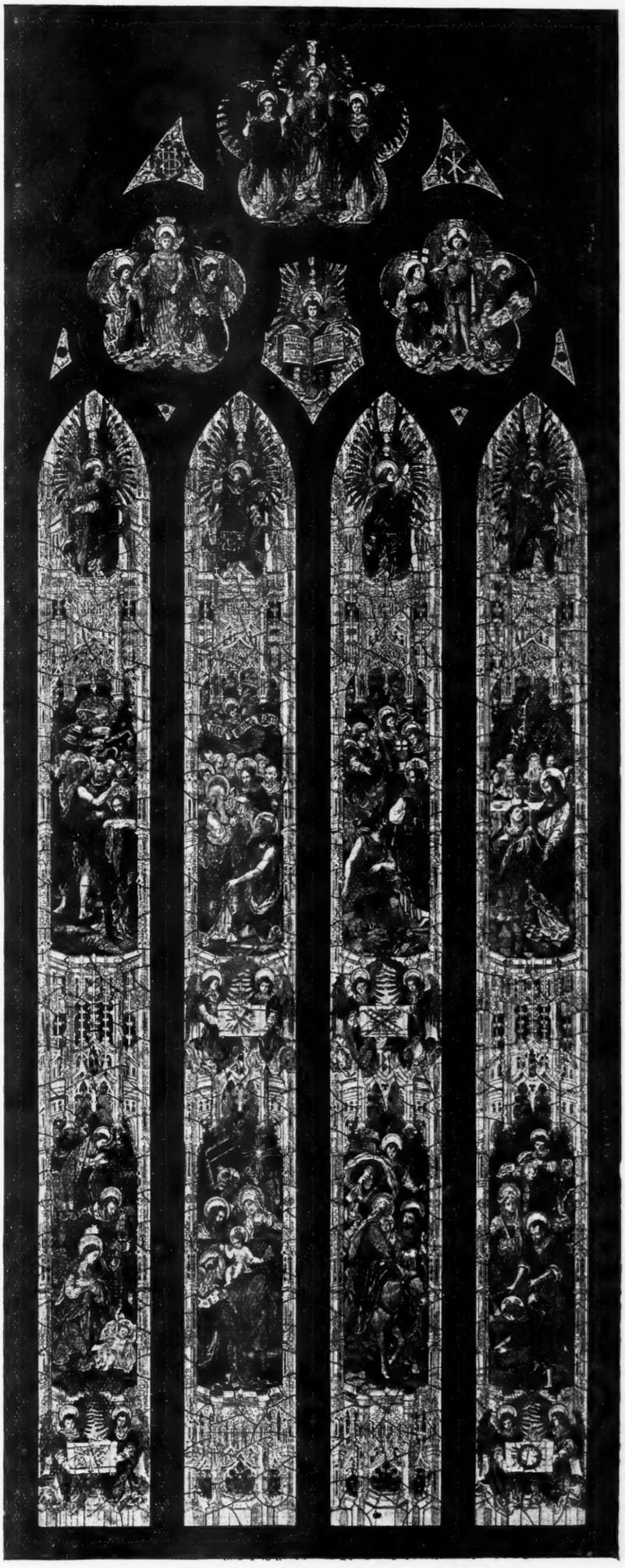
THE window here illustrated has been put up in St. Peter's, Bournemouth, by Messrs. Percy Bacon Bros., and is to be unveiled to-morrow (Sunday). The subjects depicted are, four from the early life of Our Lord, and four from his later life, thus representing the Incarnation, the keynote of which is struck by an angel in the tracery who holds a book upon which is inscribed the words: "Verbum Caro factum est et habitavit in nobis." This message, as it were, is announced by the two angels, with trumpets, to the world beneath and to the heavenly hierarchy, all the orders of angels being represented in the tracery.

The effect aimed at is dark patches of colour, very much broken, upon white backgrounds.

LONDON AND PROVINCIAL BUILDERS' FOREMEN'S ASSOCIATION.

THIS Association held its quarterly meeting on Saturday at the Memorial Hall. Mr. W. Ebdon, President, was in the chair.

After the usual routine business had been transacted Mr. G. Barclay, Vice-President, opened a discussion on "The General Foreman—from which Section of the Building Trade should he be appointed?" In the course of his paper Mr. Barclay dealt with the claims of the different sections of the trade to the position. Briefly dismissing the excavator, slater, plasterer, plumber, smith, painter, and glazier, he proceeded to the right of the bricklayer. While conceding the fact that usually he was complete master of his trade, still, owing perhaps to the monotony of bricklaying, he did not consider it necessary to become, at any rate even theoretically, acquainted with the other branches; and although with the younger members—doubtless with the march of the times—more time was being devoted to mastering the technicalities of the trade and to acquiring a more complete acquaintance with drawings, &c., still he (the speaker) was of opinion that, other qualifications being equal, the



Window, St. Peter's, Bournemouth. By Messrs. Percy Bacon Bros. (To be unveiled on Sunday next.)

bricklayer could not justify a claim to the monopoly of the general foremanship. Coming, then, to the mason. Of course, where large quantities of stone were to be used, the mason would undoubtedly be the best fitted for the position, as would the bricklayer where brickwork predominated. And although the mason's art had, in our cathedrals, &c., done so much to beautify the world, he yet doubted if for all-round work the mason had a much higher claim than the bricklayer. Then, coming to the carpenter and joiner, the speaker proceeded to show that—possibly through a closer acquaintanceship with a pencil in his trade, he somehow, as a rule, seemed to take a greater interest in mastering the technicalities of drawings, specifications, quantities, &c., and as he studied the different questions he gained the necessary knowledge to successfully carry out works entrusted to his supervision. While disclaiming any attempt to claim a monopoly of brains for the carpenter over the other branches of the building trade, still he held that, other things being equal, viz., tact in management of men, &c., the carpenter had certainly, *primâ facia*, a right to the general foremanship, and in the vast majority of cases would justify his selection. He concluded by moving a resolution to that effect. In the discussion which followed, Messrs. Ebdon, Brooker, Ackerman, Young, J. Gathercole, and others took part; the general opinion being that the three branches selected by Mr. Barclay certainly had distinct claims, although some difference of opinion as to his final selection was expressed. The question, however, was not put to the meeting to vote upon, and a vote of thanks to Mr. Barclay brought the meeting to a close.

COMPETITIONS.

BRIDGE OVER THE MEDWAY.—The Midland District Council have awarded a 50*l.* premium for the best design of a steel bridge over the river Medway, in Kent, to Mr. Henry Woodhouse, of Sir Thomas-street, Liverpool. The cost is about 33,000*l.* The design is got out on a new system of construction by use of arched steel tubes, which make it very light and strong. The centre-span is 240 ft. long, and there are twenty spans of 120 ft. long each, making a total length of steel viaduct of 2,880 ft. These arches are supported on steel tubes, and it rises to a height of over 95 ft. above the river.—*Liverpool Courier.*

Correspondence.

To the Editor of THE BUILDER.

LORD LEIGHTON AS ARCHITECT.

SIR,—Among the various notices of the late "Sir Frederic" (as he will always be called) none even allude to his mastery over architecture as a fine art.

For years he had been commonly placed higher as a sculptor than a painter; and he had raised the whole level of the former art in England as much by his own works as by his discriminating encouragement of young sculptors, and the greater importance he had caused to be given to the sculpture rooms at the Royal Academy. Yet his artistic faculties were probably greatest where they are commonly the feeblest among painters, viz., in architecture itself.

On the appearance of the first of his lectures to students of architecture at the Royal Academy, the rank and file of architects seemed to be struck dumb, as at some one who might be irreverently playing Aunt Sally among the Five Orders as set up by Vitruvius. For his language brushed aside technicalities and school-jargon, and, soaring aloft, sang the song of art, grasping first his subject as a whole, then in detail, and ever dealing with architecture as a real and living thing. Even when destined to speak of the most prosaic sort of architecture, viz., that of Germany, he did so tenderly and appreciatively, subtly detecting such latent graces and beauties as caused his very language to brim with artistic beauty. Soon, however, the golden weight of his writings was felt: printed copies of his lecture were bought up, and have now been long out of print.

The masculine grasp of architecture in its best sense, the full knowledge, and the high appreciation in old work of the divine presence of art, alike fascinate the reader of his lectures and convey the impression that, under other circumstances, Sir Frederic would have been a king among architects.

To the contrary view, Mr. Ruskin may be adduced. Although his draughtsmanship of existing works is superb, and his word-painting of great artistic subjects has never been equalled in English prose, he has always, and confessedly, been unable to evolve a new creation from his own inner consciousness.

This does not affect my opinion of Sir Frederic as architect.

In reply to a question, he told me, last year, that he intended to bring out his "Lectures" in the form of a book, adding gaily, "I shall write some more first."

Alas! the time has proved all too short.

Westminster, January 27. E. R. ROBSON.

The Student's Column.

CARPENTRY AND JOINERY.—IV.

JOINTS USED IN CARPENTRY.

THE methods adopted for joining pieces of wood together have always exercised the ingenuity and skill of the carpenter. In fact, the art of properly and efficiently connecting the various pieces in an assemblage of timbers, lies at the very root of the craft. The subject lends itself very readily to tabulation, for it is evident that joining timbers is necessary under the following circumstances:—

(*a*) For lengthening beams in tension, compression, and cross strain.

(*b*) Effecting a junction between joists, plates, &c., resting on or in beams.

(*c*) Between upright posts resting on beams.

(*d*) Between beams resting on upright posts.

(*e*) Between oblique struts and beams and struts with posts.

(*f*) For connecting suspending pieces and tie-beams.

Many other joints for different purposes arise, having to suit special circumstances, but they are mostly to be found in combinations of the above-mentioned, and will readily suggest themselves to the student. In connexion with joints, the question of fastenings can hardly be considered apart; these may be briefly summarised as belonging to either of the following types:—Wedges, keys, pins (including wooden pins, nails, screws, and bolts), straps, and sockets. We shall refer to these briefly in the joints in which they are used.

Taking our first division (*a*) *the lengthening of beams* in tension, compression, and cross-strain, we find that three methods are in use, viz., *lapping, fishing*, and *scarfing;* these may be described very briefly, as the introduction of iron and steel renders such an operation less usual than formerly. *Lapping* (fig. 31) consists, as its name implies, in laying one beam over the other, and is the simplest form of junction, as illustration; it evidently is of use only for cross strain or compression, the two pieces being bound together by iron straps, but if a tensile strain is required, bolts passing through the two pieces are used. *Fishing* consists in butting the ends of two pieces of timber together and placing an iron plate of a certain length on each side of the joint and passing bolts through from one side of the beam to the other. A fished joint is unsuitable for a cross strain, and if used in compression there should be plates on all four sides; the strain is taken by the bolts, and may be lessened in two ways, either by tailing the fish-plates into the beams or by inserting keys, which thus hold the parts firmly together when the strain is put upon them.

Scarfing is a form of jointing in which the surfaces of each piece overlap and are sunk into one another, so that the resulting wooden beams present a much neater finish than either of the foregoing methods. Although the necessity for using such a joint has been minimised by the increased use of iron and steel joists, yet in roofs it is frequently required, as also in country places, where iron is not so easily obtainable. Tredgold goes elaborately into the subject, remarking, however, that the simplest forms are the best in order to ensure accuracy of fitting.

We give the following rules for determining the length of the different parts of a scarf, according to the qualities of the different varieties of wood in which it is formed.

Proportion of length of scarf to depth of beam, according to Tredgold.

	Without bolts.	With bolts.	With bolts and indents.
Hard wood, as oak, ash, elm	6	3	2
Pine and fir.....	12	6	4

The sum of the depth of the indents should equal $1\frac{1}{2}$ the depth of beam.

A *scarf to resist tension* is shown in fig. 32, and can be used without straps or bolts. A scarf to resist compression is shown in fig. 33; the principal point to keep in mind is that the bearing surfaces are perpendicular to the strain; the fish-plates tend to keep the joints from buckling or turning over. It is evident that, if this form were used for tension, its strength would depend entirely on the bolts, while, if it were used for cross strain, the latter would tend to bend the iron plates and tear out the bolts.

A *scarf to resist cross strain* (fig. 34) has the upper fibres in compression and the lower fibres in tension; this being the case, the indents on the upper surface should be perpendicular to the pressure, those in the lower portion being oblique to resist tension only, as great a thickness as possible being obtained at *c b*. Barlow mentions that a joint formed in vertical planes between the two connecting pieces is stronger than the one shown; it is, however, seldom used.

We have now briefly discussed the joints which may be used in lengthening beams for tension, compression, and cross-strain; it sometimes happens, however, that we may want a joint which can withstand two, or even three, kinds of strain.

A scarf to resist *tension and compression* is shown in fig. 32; in this example the resistance to tension is given by means of keys of hard wood, or better still, of wedges which bring the pieces close together so that as little strain as possible may fall on the bolts. Keys are usually made one-third the depth of the timber.

A scarf to resist *tension and cross-strain* is shown in fig. 34, the necessary strength for the former being obtained by indenting and the insertion of wedges. Scarfing wall-plates is effected, as shown in fig. 36, but the joint is made in the direction of its length.

(*b*) *Joints for beams bearing on or in beams.*—The simplest form consists in halving (fig. 35), and is generally used for wall plates; this joint is effected by sawing half the thickness out of each piece, and, the two being fitted together, the upper and lower surfaces are flush.

Bevelled halving (fig. 36) has the surface of the joint splayed in a bevel form, and a weight being applied in the form, say, of rafters, the two wall-plates are held firmly together.

Dovetail halving is more elaborate still, and its name explains itself. This is not a good joint for carpentry, as wood shrinks considerably more across the grain than along the length, and consequently the pieces do not fit closely. It is principally used for joining the collar to the rafter in a collar-beam roof.

Single notching (fig. 37) is effected simply by taking a piece out of the lower side of a joist which is to rest on a beam or wall-plate.

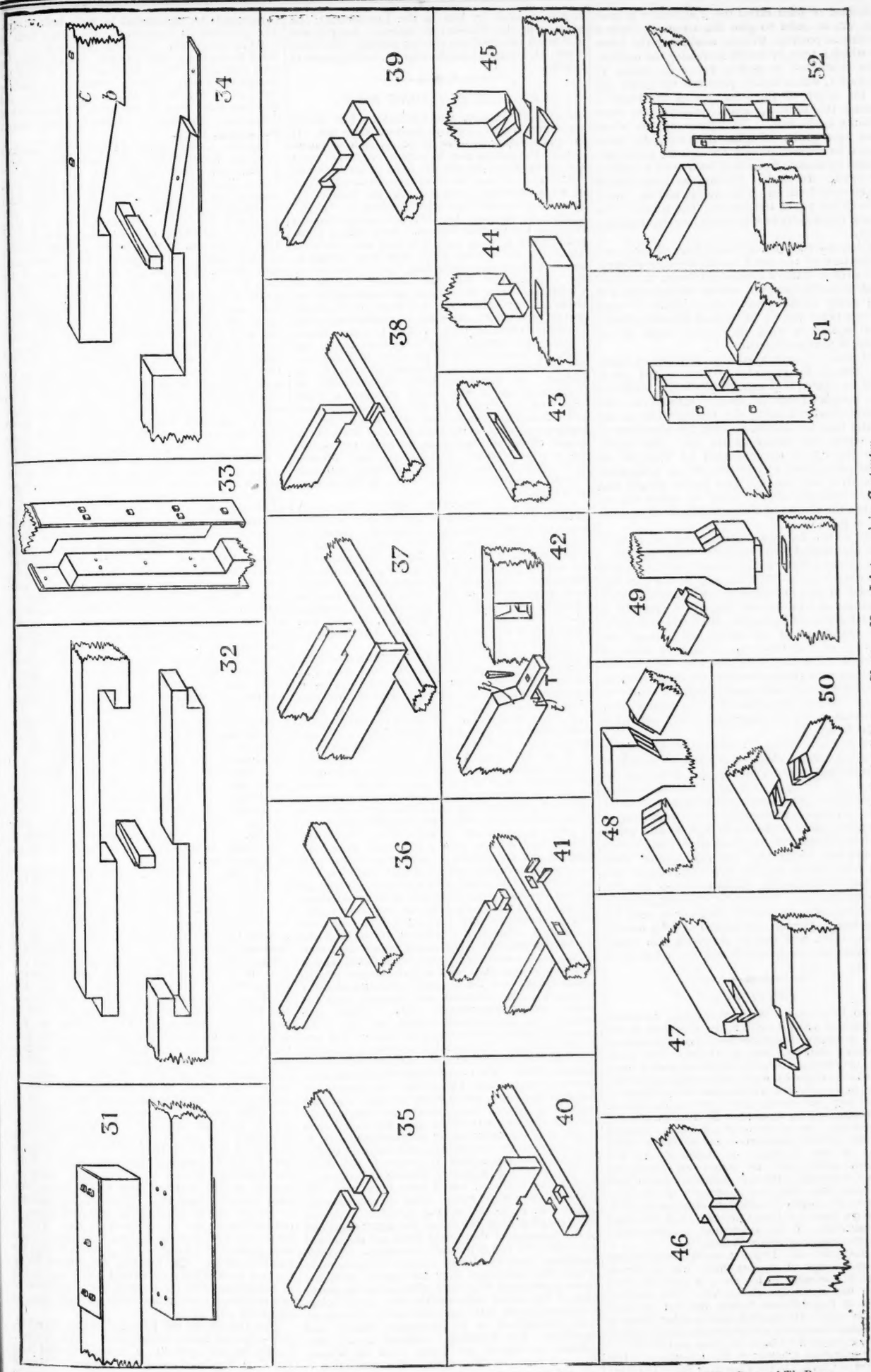
Double notching (fig. 38), is so called when two notches are taken out, one from the upper and one from the lower beam; this joint is used where beams are required to be within a certain depth, and saving of space is effected.

Dovetail notching (fig. 39), is principally used for jointing wall plates at the angles. It is executed as sketch, one of the sides being left straight, and a wedge is sometimes driven in to tighten up the whole.

Cogging (fig. 40), is a form of joint which possesses advantages over notching. The sketch will explain the joint, in which it will be seen that a notch is *partly* cut out in the lower beam, leaving the centre uncut; the upper beam has a notch only sufficiently wide to receive the cog; the advantage of this is that the upper beam is its full thickness at the point of support, and is therefore evidently stronger than when notched. By using this joint for a tie-beam resting on a wall-plate, the former thus holds the latter in position, even when it does not project beyond it. Cogging is also used for the joint between a purlin and principal rafter.

Mortise and tenon joints (fig. 41).—This joint, in its commonest form, consists of a mortise or rectangular hole cut into the side of the main beam to receive a tenon or projection from the end of the cross-beam, which fits closely into it.

Two points to be remembered in designing this important joint are (1) to make the tenon as large, and, therefore, as strong as possible, and (2) to make the mortise as small as possible, in order to weaken the beam as little as may be. The mortise and tenon should be placed on the neutral axis, where the cutting of the fibres will weaken the girder least, and where both the mortise and tenon which has to fit into it will be free from tension and compression. In practice the lower edge of the mortise is usually placed on the neutral axis, and the depth of the tenon is $\frac{1}{8}$th of the depth of the beam.



Illustrations to Student's Column: Chapter IV.—Joints used in Carpentry.

31. apping.
32. Scarfing.—Tension and Compression.
33. Scarfing.—Compression.
34. Scarfing.—Cross Strain and Tension.
35. Halving. 36. Bevelled Halving.
37. Single Notching.
38. Double Notching.
39. Dovetail Notch.
40. Cogging.
41. Mortise and Tenon Joint.
42. Tusk Tenon.
43. Chase Mortise.
44. Upright Mortise.
45. Bridle Joint.
46. Post and Beam Joint.
47. Bridle Joint.—Principal Rafter and Tie Beam.
48. King Post and Principal Rafters.
49. King Post and Tie Beam.
50. Strut and Principal Rafter.
51. Suspending Pieces, Kinghead and Rafters.
52. Suspending Pieces.—King Post, Struts, and Tie Beam.

A form of joint called the *Tusk-tenon* is used (fig. 42) in order to give the tenon as deep a bearing as possible, without weakening the beam on which it rests, by largely increasing the mortise. This is effected by adding below the tenon *T*, the tusk *t*, which should penetrate the girder ⅓th of the depth of the joist; above the tenon is formed the *horn h*, which projects the same distance as the tusk. To tighten up the whole joint in a girder of 4-in. thickness, the tenon should be made to project through the girder and pinned by means of pieces of hard wood torn from the baulk. In thicker girders, the tenon should penetrate at least twice its depth, and be pinned through the top of the girder. The trimmer of a hearth is generally tusk-tenoned into the trimming joists.

Chase-mortises (fig. 43) are a form of joint used in the case of two fixed beams between which it is desired to frame a connecting piece, an oblique chase is cut by means of which this cross piece is slid along to its place. *Fox-wedging* is used when a beam has to be framed into one already fixed against a wall, the beam, when driven home, is thus made secure.

(*c*) *Joints between upright posts resting on beams* are effected by an ordinary mortise and tenon joint, as sketch (fig. 44), in which the width of the upright beam is divided into three, the central division forming the tenon, which is cut shorter than the mortise so that the shoulders of the tenon bear firmly on the sill. The *bridle* joint (fig. 45) is recommended by Tredgold as being easily fitted, and consists of an adaptation of mortice and tenon. The bridle should not exceed one-fifth of the beam in order not to weaken the cheeks of the posts which fit on each side of it.

(*d*) *Joints between beams resting on upright posts* are effected by a horizontal tenon (fig. 46).

(*e*) *Joints between oblique struts and beams and struts with posts.*—The former, as used in the junction of principal rafter and tie-beam is effected by means of a bridle-joint (fig. 47). The joint is generally assisted by an iron strap which helps to take the thrust of the rafter and prevent the shearing of the tie-beam. The connexions of principal rafter with king-post (fig. 48) and also the struts with principal rafter are effected by an ordinary mortise and tenon joint, as shown at fig. 50. Where the collar of a roof joins a rafter a dovetail notch is sometimes used, somewhat similar to fig. 39.

(*f*) *The joint between suspending pieces* (*king or queen posts*) *and tie-beams* is effected by means of a mortise and tenon joint (fig. 49), which can be braced up by means of what is known as a *gib-and-cottar* joint, which will be described under roofs. A more economical way of making a suspending piece is shown in figs. 51 and 52, in which it is formed of two thicknesses; the rafters (fig. 51) and struts (fig. 52) butt against each other respectively, and the suspending pieces are notched to take up the principal rafters and the tie-beam (fig. 52). Besides the fastenings already mentioned, nails, spikes (*i.e.*, large nails used for heavy work), trenails (or pieces of hard wood), screws, bolts, and various forms of iron straps and shoes are used, which will be referred to ater on.

OBITUARY.

LORD LEIGHTON.—We regret to have to record the death of Lord Leighton, the President of the Royal Academy, which occurred last Saturday at the artist's own residence in Holland Park-road. Lord Leighton, particulars of whose career have been so fully given by most of our contemporaries, and an appreciation of whose work will be found on another page, was elevated to the peerage in January. His remains will be interred in St. Paul's Cathedral on Monday. In our issue of June 30th, 1894, at the time of the presentation of the Royal Gold Medal of the Institute of Architects to the deceased artist, will be found an interesting account of his life. We also published, under date September 4th, 1886, an illustration of the new fresco at the South Kensington Museum by him, and in our issue for June 13th, 1891, will be found an illustration of his celebrated sculptor-work: "Athlete struggling with a Python."

M. LAUGÉE.—M. Désiré Laugée, who has just died at the age of seventy-three, was a French painter of eminence in his day; a pupil of Picot and at the Ecole des Beaux-Arts. He received medals at five different Salons, the last occasion being in 1869. He painted among other things a good many decorative wall-paintings, among which may be mentioned "Christ, St. Peter and St. Paul," in the collegiate Church of St. Quentin; "The Baptism of Clovis," in the Church of Ste. Clothilde; "Saint Denis," in the Church of the Trinité; "The Birth and Education of the Virgin," in the Church of Gros Caillon; and the "Triumph of Flora," in the Salle des Fêtes of the Hôtel Continental. There is also a work by him in the Luxembourg, and another in the Museum at Amiens. Laugée was also much esteemed as a portrait-painter. He leaves a son, M. Georges Laugée, who is also a painter of talent.

GENERAL BUILDING NEWS.

CAMBRAY HOUSE, CHELTENHAM.—For whom this mansion was originally built we know not. It is square, rather box-like in shape, built of finely-dressed Bath stone, and belongs to the period when the Adam style had cast off most of its frips and furbelows. As may be seen, then, its façade is one of stern, unsmiling propriety. At the back of the great square garden runs what is called the "river" Chelt. At one time this mansion was the English home of the Orleans Princes. And, within a few years, some of them paid it a visit and wandered about the old garden which they had learned to love. A more interesting fact, locally, attaches to the circumstance that the Ladies' College at Cheltenham—now the largest and most celebrated ladies' college in the world, with large new buildings and grounds of its own—was originally founded in Cambray House, in 1854, by Miss Dorothea Beale. Having been recently bought by Miss Beale, the house has been enlarged by the addition of two projecting wings, from the designs of Mr. E. R. Robson. As the front forms the vista-line of Cambray-place, a wide street running at right angles to the High-street, the enlargements have added somewhat in mass and dignity to the general appearance. The works have included much in the way of repairs and sanitation, warming, ventilation, and accommodation. The builders were Messrs. A. C. & S. Billings, and the hot-water work was executed by Messrs. R. E. & C. Marshall, both local firms.

CONDITION OF THAXTED CHURCH, ESSEX.—A committee has just been formed to deal with the condition of the Church of St. John the Baptist at Thaxted. The services of Mr. Richard Creed as architect, and of Mr. C. E. Kempe, with respect to the ancient glass, which is in a very precarious condition, have been secured. These gentlemen, having made an inspection of the fabric, compute that the necessary work will cost approximately between 5,000*l.* and 6,000*l.* The committee, however, feel that it will be able to proceed when about one-third of this sum has been raised.

HIGHER GRADE SCHOOLS, STOCKTON-ON-TEES.—Higher Grade Schools have just been erected at Stockton-on-Tees. The building on plan is a parallelogram, and occupies a position fronting into Nelson-terrace. The school building is set back 15 ft. from the street line It is four stories in height, each room being over 15 ft. from floor to ceiling, excepting the gymnasium, which is somewhat over 17 ft. in clear height. There are four entrances from Nelson-terrace, two for the senior and junior girls, and two for the senior and junior boys, as well as exits and entrance doors from the playground at each end of the building and for each sex, the whole giving access to the staircases, and arranged so as to effect a separation of the sexes. The lower ground-floor consists of a gymnasium, workshop, laundry and washhouse, cookery class-room, with scullery attached, and cloak-rooms and lavatories. The gymnasium is arranged with a colonnaded balcony around the ends and along one side, raised above the floor, and fitted with seats for the accommodation of spectators, and forming a means of communication between the different rooms and the several departments. The upper ground-floor contains a main central hall for the junior mixed classes, and four class-rooms, with a lecture-room for the senior classes and the lecturers' retiring and other necessary rooms attached, and isolated from the main teaching departments. The first-floor plan contains the senior mixed central hall, five class-rooms, chemical laboratory, with balance and preparation rooms. The chemical laboratory is lighted and ventilated by a roof-lantern, and provided with the necessary flues. The second-floor contains two class-rooms for the training of pupil teachers, a large room for drawing-classes, and a room for modelling, both capable of division. Ample cloakrooms and lavatory accommodation are provided upon the several main floors, or in the mezzanine or intermediate floors, as well as rooms for the teachers, and stores for books. The building throughout is fireproof, the floors being constructed by Messrs. Homan & Rodgers, of Manchester. Glazed bricks have been used, the dados of the several rooms being of this material, about 4 ft. in height, with a moulded pitch-pine dado running along the line of the upper edge, and at the junction of the glazed brick and the cement with which the rest of the walls is covered. Movable partitions, fixed by Messrs. Brady & Thornbrough, divide the class-rooms from the central halls, the upper parts being filled with glass, allowing practically of the central halls and the class-rooms being, if required, made into one large room. The woodwork throughout is of pitch-pine, stained and varnished. The warming is effected by the low-pressure system of hot water, fixed by Messrs. Emley & Sons, of Newcastle. The ventilation is effected by extract air shafts connected to the automatic air-pump ventilators in the turret, fixed upon the highest ridge of the building. Open fireplaces are provided in the several class and teachers' rooms as auxiliaries to the warming and ventilation. The playgrounds are surrounded by walls built in brick. The playgrounds themselves are covered with an asphalte pavement. Covered playsheds are provided for each sex, with latrines. The building has been designed by Mr. J. M. Bottomley, of Middlesbrough and Leeds. The contractor for the whole of the work is Mr. W. C. Atkinson, of Stockton, and Mr. John Sanderson, of Stockton, has been clerk of the works. The amount of the building contract was 13,314*l.* 4s. 7d.

COUNTY COURT AND MAGISTRATES' CLERK'S OFFICES, ROTHERHAM.—The new offices erected in Moorgate-street, Rotherham, for Messrs. F. Parker Rhodes & Co., Rotherham, and also for the carrying out of the business of the Rotherham County Court, and the Magistrates' Clerk, are now practically finished. Although there are three distinct sets of offices, each set is complete in itself. They are separated by flag-paved passages leading to back yards. On the ground-floor, the furthermost offices will form the new premises of the County Court. A separate entrance and exit is provided to the public office; this room is 33 ft. by 20 ft., and attached to it is a private office, a strong-room, and there are also lavatories, coal-places, &c. The next set of offices on this floor will be devoted to the Magistrates' Clerk, which also comprise a public and private office, strong-room, lavatories, &c. The lower offices, at the High-street end, on the same floor, will be occupied by Messrs. F. Parker Rhodes & Co., solicitors. On the right of the entrance-hall is the inquiry and general clerk's office, separated from the hall by a glazed pitch-pine screen. At the further end are cloak-rooms and lavatories. The hall is paved with oak blocks, and a moulded pitch-pine staircase leads to the first floor. A private office on this floor is fitted with pitch-pine, and the floors are arranged with sound-proof material. On the second floor additional offices and store-rooms are provided. Private staircases communicate from the first-floor with the County Court and Magistrates' Clerk's offices below. The vestibules are laid with mosaic, the corridors of the County Court and magistrates' clerk's offices are tile, paved by Messrs. Maw & Co. The strong-rooms are ventilated, lined with white glazed bricks, have asphalte floors, and are provided with Milners' double-doors. Revolving iron-spring shutters are fixed to the ground-floor windows, arranged to work from the inside. The external front elevation is executed in thin pressed bricks from Messrs. E. Brooke & Sons, of Huddersfield, with moulded cornices, strings, jambs, &c., specially made to the architect's detail drawings. The stonework to the front is from Stoke Hall. Red Ruabon tiles cover the roof. The general style of the building is a type of Queen Anne, and the exterior is intended to harmonise with the adjoining buildings. The general contractor for the whole work is Mr. Wm. Thornton, jun. Those under him have been Mr. Tradewell, of Rawmarsh, for the joiner's work; Mr. Jervis, the slater's work; Mr. Jennison has done the plastering; Mr. Lister, the plumbing; and the painting was by Mr. W. Wright. The plans for the buildings were made by Mr. J. E. Knight, architect and surveyor, Rotherham, under whose direction the work has been carried out.

BUILDING STATISTICS, SHEFFIELD.—The past year has been a period of great activity in the Sheffield building trade, and according to the statistics gathered in the building department of the City Surveyor's office, during the year the number of plans submitted to the Highway and Sewerage Committee was 992, as compared with 940 last year, while in 1888 the number was only 332. Of the plans submitted 644 were approved, representing 1,174 dwelling-houses and 432 other buildings. The number of houses actually erected was 999, as compared with 938 last year, and the largest total since 1880. The buildings of other descriptions numbered 253, against 200 last year, the 1888 figures being only 91. Thirteen buildings were certificated under Section 87 of the Sheffield Corporation Act of 1883, relating to means of ingress and egress, which buildings are places of public resort. In 1894 the number was 11. Of the 992 plans submitted 57 were for new streets and sewers, 31 being approved. In 1894 the number submitted was 60 and 27 approved. Since the passing of the Act of 1883 122 buildings or rooms used for public purposes have been certified. Since the building by-laws were put into operation, namely, in 1864, no fewer than 27,149 houses have been erected. Last year 188 permits were granted for the erection of hoardings in dedicated streets, as compared with 280 in the previous year. Permits for the erection of lamps and gas rails outside shops were granted to the number of 47, while in 1894 the number was 72. The building department during the year were called upon to deal with 3,044 notices in connection with the erection and completion of new buildings, foundations, drainage, and plans, as compared with 2,890.

THE TOWER OF ST. JOHN'S CHURCH, CARDIFF.—At a special Vestry meeting of St. John's Church, Cardiff, on the 23rd ult., a report was read from Mr. C. B. Fowler showing the dangerous state of the church tower, and recommending measures to be taken for its restoration. The cost was estimated at about 3,000*l.* The following resolution was ultimately adopted:—"The Vestry, having heard Mr. Fowler's report of the dangerous and decayed

condition of the tower, and having seen the plans proposed for its reparation and restoration, requests the vicar to apply for a faculty in order that the work may be proceeded with without delay."

BOARD SCHOOLS, WELLINGBOROUGH, NORTHAMPTONSHIRE.—The new Victoria Board Schools at Wellingborough have just been opened. The site is situated on the Stanley Estate, and upon this Messrs. Brown & Sons have built, from the designs of Messrs. Talbot Brown & Fisher, two blocks of schools. The schools are planned on the central-hall system, in two blocks—one for 740 boys and girls, known as the Mixed Department, and the other for 436 infants, a total of 1,175 children. In each school the floors are composed of wood blocks, laid on concrete. Both schools are heated on Grundy's principle. The total cost of the buildings, exclusive of the site, has been about 11,000*l.*

HIGH SCHOOL, KIRKCALDY.—A new high school has just been erected at Kirkcaldy, at a cost of 15,000*l.* Mr. Gillespie, St. Andrews, was the architect for the new building.

RESTORATION OF ST. PETER'S CHURCH, COLCHESTER.—The partial restoration of this church has just been carried out by Messrs. King & Lister, of Plymouth, architects, with a view to reserving intact the original architecture, making sound where defective, and replacing the clearstory which was demolished during the siege of Colchester by the Parliamentarian troops. Special provision was made for the preservation of memorials of the dead, and the uncovering and reinstating of such as might be discovered in the course of the work. As a result, the burial-places of several Colchester worthies have been again brought to light. Mr. J. Grimes, of Colchester, was the builder.

BAPTIST CHURCH, BOOTLE.—On the 23rd ult. the memorial-stones were laid of a new Baptist church on a site in Stanley-road, Bootle. The total length of the church will be 68 ft., and it will accommodate 300 persons on the ground floor, and 120 in the gallery. The style of architecture throughout is Romanesque. Mr. W. Hall, of Liverpool, is the contractor; the architects being Messrs. Richard Owen & Son.

PUBLIC BATHS AT BURSLEM.—On the 23rd ult. the public baths, which have been erected by the Burslem Corporation, were opened. Mr. F. Bettany, the Borough Surveyor, was the architect of the new buildings. The total cost has been 10,500*l.*

BOARD SCHOOLS, BOSTON, LINCOLNSHIRE.—On the 18th ult. the memorial stone was laid of the new Board schools at Boston. The schools are situate in Fydell-crescent, and are being constructed by Mr. H. W. Parker, at a cost of 3,899*l.*, from designs prepared by Mr. J. Rowell, architect, of Boston. They will provide accommodation for 696 children, and with the Park schools at the opposite end of the town, which are to accommodate 694 children, will provide school places for a total of 1,300 children.

EXTENSION OF A SYNAGOGUE, HAMMERSMITH.—The foundation-stone of an extension to the new Synagogue at Hammersmith was laid on the 26th ult., by Mr. B. L. Cohen, M.P., L.C.C. The plans have been prepared by the honorary architect, Mr. Delissa Joseph, and the contract is in the hands of Messrs. Chamberlen Brothers. The extension comprises the construction of two aisles and side galleries, the enlargement of the apse, the formation of a clearstory, and building of a second staircase. It will double the capacity of the edifice, and provide seats for 400 persons.

POLICE-STATION, SEAFORTH.—A new police-station for Seaforth, Waterloo, and Crosby district is being erected in Seaforth-road, Seaforth. The general group of buildings will consist of houses for the superintendent of the district, with offices attached, of houses for inspectors and sergeants, together with a day-room and dormitories for single men. In addition there will be a charge-office and eight cells for prisoners. In that portion of the building facing Lime-grove will be a weights and measures office. The whole of the premises mentioned will be furnished with baths and hot-water heating. The design also provides for a private entrance and consulting-room, clerks' office, public entrance, witnesses' and solicitors' rooms, &c., should there be erected here at any future time a police-court. A large exercising or drill-yard, with covered shed attached, has been provided. The principal buildings face Seaforth-road, with a frontage of about 165 ft. in length, the other elevation in Lime-grove extending lineally about 150 ft., and also an exercising ground for prisoners. The architects are Mr. George Holme, county surveyor, and Mr. Francis W. Holme, of Liverpool.

EXTENSION OF HOSPITAL, JOHNSTONE, RENFREW.—Contracts have just been settled for the extension of Johnstone Combination Hospital, the cost of which will amount to about 5,000*l.* The successful contractors are:—Builder, John Keanie, Lochwinnoch; joiners, Purdon & Cuthbertson, Kilbarchan; slater, John Marshall, Kilbarchan; plasterer, John M'Quarrie, Glasgow; plumber, Charles Murdoch, Johnstone. The plans have been prepared by Mr. J. L. Cowan, architect, Glasgow.

CHURCH, EASTBOURNE.—On the 25th ult. Archdeacon Sutton dedicated the new St. Peter's Church at Eastbourne, which has seating accommodation for 800 persons. The church is erected on a piece of land at the corner of Meads and Granville roads. At present the main portion of the church only has been built. It is in the Early English style, the exterior walls being composed of Kentish ragstone, with facings of Portland stone, and the interior of red bricks, while the roofs are covered with Broseley tiles. So far the nave, aisles, chancel, with vestries and organ-chamber, and baptistry have been erected: in the course of time it is proposed to add a square tower, estimated to cost 4,000*l.*, and a morning chapel at an expenditure of 1,500*l.* Within, the nave is divided from either aisle by five arches, supported by circular pillars of Portland stone. There are full-light windows at the east and west ends, and seven groups of lancet windows in each aisle, with a three-light window in the baptistry, while for artificial light the electric light has been installed. The floor is composed of pitch-pine blocks on a foundation of concrete and cement, and the benches are of pitch-pine stained a walnut colour. The measurements of the building are:—Length (externally), 147 ft.; width, 69 ft. 3 in.; height, 62 ft. The work has been carried out by Messrs. Longley, from the designs of Messrs. H. & P. Currey. The total cost of the portions of the church already undertaken is 16,103*l.* 11s. 8d.

FULHAM FREE LIBRARY.—A new reading-room, which has been erected in the Wandsworth Bridge-road as an auxiliary to the parent free library of the parish, has just been opened. The building consists of a reading-room, 60 ft. by 30 ft., with stands for thirty newspapers, and twelve tables. The architects were Messrs. Billing, Son, & Rowley, and the builder Mr. J. F. Collinson.

NEW CHAPEL, ASHTON-UNDER-LYNE.—The trustees of the Methodist New Connexion have decided to build a new chapel in Trafalgar-square, Ashton-under-Lyne, and as the result of a limited competition the design of Mr. J. H. Burton has been accepted.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY FOR AMBLE, NORTHUMBERLAND.—The Amble Urban District Council have now commenced the work of bringing spring water to the town from distant sources. All the preliminary surveys, investigations, and plans have been made, and the Government approval has been obtained. The contract has been let to Messrs. R. Carse & Son, of Amble, for 5,897*l.* 19s. 6d., and operations have been commenced. Mr. M. Temple Wilson, of Alnwick the engineer, estimated the total cost as likely to be 6,600*l.* By the scheme the water will be conveyed by gravitation from a drift near Newton Colliery, and a number of springs at Hazow, into a collecting and subsidence reservoir, which will hold 100,000 gallons. There will be laid over eleven miles of 6-in., 4-in., 3-in., and 1½-in. cast-iron pipes, and there will be a service reservoir to hold one million gallons, or over a fortnight's supply at the rate of twenty gallons per head per day for the population of 4,000. Mr. John Wintrip, of Blyth, has been appointed clerk of works.

BIRMINGHAM CORPORATION WATER BILL.—Mr. James Mansergh, C.E., has deposited his Parliamentary estimate of expense that will be incurred by the Birmingham Corporation in the event of their Bill for next Session receiving the sanction of Parliament. The total cost of the whole of the proposed works, including the purchase of the necessary property and allowing for contingencies, is set down at 110,000*l.* Of this sum the works connected with the proposed deviation of the authorised aqueduct will cost 103,090*l.*, and the proposed 7 fur. 4·08 chains of railway will cost 6,910*l.* With this estimate the Town Clerk has lodged a declaration "that the rates and revenue of the Corporation, upon which the moneys for making the works proposed to be authorised will, with other moneys, become chargeable, will amouut to 231,000*l.* per annum."—*Birmingham Mail.*

SEWAGE SCHEME, AYTON, YORKSHIRE.—Colonel A. G. Durnford, R.E., an inspector under the Local Government Board, held an inquiry at the Village Hall, Great Ayton, recently, respecting an application to borrow 3,500*l.* to carry out the proposed main drainage scheme for the township of Great Ayton. Evidence having been given in favour of the scheme, the plans were described at length by Mr. T. W. Stainthorpe, C.E., who acted as assessor in the competition, and Mr. Taylor (Newcastle), the successful competitor.

SEWAGE SCHEME, DRONFIELD, DERBYSHIRE.—On the 24th ult. Colonel Durnford, R.E., one of Her Majesty's inspectors, held an inquiry at the Town Hall, Dronfield, on behalf of the Local Government Board, with reference to the proposed loan of 6,000*l.* for sewage and sewage disposal works. Mr. George White, C.E., Mexborough, is engineer of the sewage scheme.

THE WATER SUPPLY OF MALVERN LINK.—Mr. Baldwin Latham, C.E., has prepared for the information of Parliament an estimate of the cost of the new waterworks proposed to be constructed under the powers contained in the deposited Bill of the Urban District Council of Malvern Link. He estimates that the cost of these works, including the purchase of all necessary lands, and after providing for contingencies, will amount to 35,000*l.*

CONSTRUCTION OF LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned the construction of local sewers as follows:—Battersea—710 ft. of 12-in. pipe and concrete sewer in Theatre-road, Lavender Hill. Islington—200 ft. of 9-in. pipe and concrete sewer in Kelross-road, Highbury Park. Paddington—85 ft. of 3-ft. 9-in. by 2 ft. 6-in. brick sewer in Ashworth-road, Lauderdale-road. St. Pancras—425 ft. of 12-in. and 100 ft. of 15-in. pipe and concrete sewers in Camden-road, and 350 ft. of 12-in. pipe and concrete sewer in College-street.

FOREIGN.

FRANCE.—On the strength of the new rules issued by the Public Administration, the National Museums of the Louvre, the Luxembourg, Versailles, and St. Germain have been invested with "personnalité civile"—that is to say, they are now entitled to receive private donations and legacies.——The Municipal Council of Paris have decided to rebuild the School of Physiology and Industrial Chemistry, adopting all the latest improvements that are to be found in the Belgian and German schools.——M. Berlier, the engineer, has just finished most satisfactorily the work of making a syphon under the Seine at the Pont de la Concorde, in order to connect the intercepting sewer on the left bank with that of Asnières.——In the Palais Rameau at Lille the architects of the townare exhibiting their competition designs for the erection of a Conservatoire of Music and Declamation in the Place Sébastopol. The names of the competitors are Vandenberghe, Ghesquier, Hannotin, Dehautd, Cordonnier, Delemer, Mollet, Hainez and Santerre, Batteur, Contamine, and Arnold. The cost is estimated at 1,200,000 francs.——On April 23 the statue of General Barbanègre is to be inaugurated at Pontacq. He was well known for his defence of Huningue.——An electric tram is shortly to be run on the Mediterranean coast to connect Cannes, Nice, and Mentone.——Large cavalry barracks are to be built at Toulouse, in the Faubourg Saint Cyprien.——The jury on the open competition for the erection of a monument to President Carnot at Lyons have retained five designs, the architects of which will again compete in May. Their names are as follows:—MM. Lefebvre, architect, and Perrin, sculptor; Porcher, architect, and Vermare, sculptor; Huguet and Delorme, architects, and Lamothe, sculptor; Hubert, sculptor, and Roisin, architect; Gauquié, sculptor, and Nandin, architect. The design of MM. Lefebvre and Perrin is very remarkable. The statue of Carnot is leaning on a column at the foot of which are two symbolical figures of devotion and probity; below, another figure, representing the town of Lyons, offers flowers to the President; at the side are two lions who seem to be defending the arms of the town, and at the back a figure representing the Sâone, throws itself into the arms of the Rhone. There are several bas-reliefs of the principal acts in the life of Carnot.——A large grotto containing some ancient pottery has been discovered at Guéroy, near Angoulême; a similar cave with stalactites has also been discovered at Laurae, near Privas.——At the Trois Chalets, near Ance, in the Department du Rhone, some important frescoes have been discovered, dating from Roman times. These frescoes form the basement of a large room. In spite of their age they are in a good state of preservation, each panel showing birds, branches of trees, garlands of flowers and fruits, artistically treated.——M. Gerôme has just finished the monument to Paul Baudry, which is to be erected in his native town of Roche-sur-Yon. It will be inaugurated next June.——The competition opened by the Département de l'Hérault, for the erection of a large lunatic asylum at Montpellier, has not produced any satisfactory results. The building is likely to cost four millions of francs. Only five designs have been sent in, and it is doubtful if the jury will award the prize.

GERMANY.—At Crefeld a large museum is in course of erection, which will serve as a memorial to the late Emperor William.——In connexion with the various exhibitions and congresses which will be held at Berlin this summer a number of important publications will be issued, of these "Berlin 1896" promises well as a descriptive volume, and "The Architecture of Berlin," which will be edited by the local architectural society, is being prepared in a most elaborate manner. This volume will form part of the series which is being published under the auspices of the amalgamated architectural societies of the different cities of Germany.——The late City Architect at Berlin, Herr Gerstenberg, who lately celebrated his seventieth birthday, has been the subject of much ovation. It should, perhaps, be noted that he was the first Fire Brigade officer Berlin had, and that he held this office from 1851 to 1861. After leaving the service, he not only was in charge of municipal works but also had a large international practice, which extended to Sweden, Hungary, the Brazils, Chili, and other South American states.——"German Sculpture of the Thirteenth Century" is the subject for the Lamey Prize Essay, of which the conditions have now been published. Work can be sent in in French, German, or Latin, and the first premium is 120*l.*——On looking through the lists of distinguished German architects and engineers who have died during 1895, we are glad to find that the fatalities have been very small in architectural circles. Herr Dollman, of Munich, is one of the few important building officials who died during the year. Of

painters there were notably Herr Graaf and Herr Pilotz: the former well known in Germany for his architectural subjects, the latter well known in this country by some remarkable pictures.

AUSTRIA.—Suburban theatre enterprise continues to develop, and the suburb Waehring is now to have its own playhouse. Herr Flesch, the architect, is on the committee in charge of the scheme. —— Sixteen thousand florins have been voluntarily subscribed for a monument to the past Mayor of Vienna, Herr Prix.——The Emperor has given a number of orders and distinctions to the architects, contractors, and others connected with the Imperial Works Office, on the occasion of the roofing-in of the new Palace, to which we have already referred.——The new Boulevard, which will be formed by covering in the River Wien, which passes through the city, is now to be commenced. The work is of a very elaborate nature, and will necessitate a considerable expenditure.

RAILWAYS IN CHINA.—An Imperial Edict has been issued appointing officials to take charge of the construction of a railway from Tientsin to Lukow, about seventy-five miles, at an estimated cost of 2,400,000 taels; and the line is to be continued to Hankow, about 500 miles further, as soon as a suitable man with 10,000,000 taels comes forward to undertake the work. The Government promises not to obstruct, but to do everything that is good for the success of the scheme.—*Indian Engineering.*

PUBLIC BATHS FOR NEW YORK CITY.—The plans for one of the series of public baths recommended by the Committee of Seventy have been accepted by New York City. This plan calls for eighty baths, fourteen of which are tubs, the remainder being shower and rain baths. Forty-two of the baths are for men, fifteen for boys, and twenty-three for women and children. The interior work is to be of white enamelled iron, marble, and glass, every possible provision for cleanliness and neatness being desired. The men and women will have entirely separate compartments with convenient waiting-rooms. Allowing twenty minutes for a bath this house could accommodate 20,000 persons weekly, while if the proposed series of six were built 25,000 persons could be bathed daily. The Tenement House Commission reports that 255,000 persons under its inspection have no access to baths in their homes.—*Engineering Record.*

MISCELLANEOUS.

THE SLATE TRADE.—In this trade we have experienced another year of prosperity, the demand having exceeded the supply all the time, and prospects for the current year are good, as orders are being booked well forward. The prolonged frost in the early part of the year materially lessened the output, and this will be still further reduced by falls which took place in some of the quarries towards the close of the year. This reduction in the make has led to efforts being made to introduce foreign slates, but apart from the question of price (in which there does not seem to be much inducement to use them) the experience of former years will tell against them, as their want of durability and motley appearance on roofs is much noticed in the suburbs of London. Mr. Nangle, in his able paper on "Roof Covering,"* comments on these defects, which are caused, we believe, by the slates being collected from a number of small quarries. We therefore believe that the scare raised in some local papers in regard to the use of foreign slates is groundless. No new quarries of any importance have been opened, and owing to the limited area of the true slate veins few can be, as the workable ground is mostly in the hands of the owners of existing quarries; in some cases small workings are being carried on by quarrymen on the tribute system, an experiment which is being watched with a good deal of interest locally. Wages are good, and, with the exception of one small strike, the labour question has been undisturbed.

ELECTRIC LIGHTING, SWANSEA.—At the Swansea Town Hall, on the 22nd ult., Col. Walter Mardon Ducat, R.E., Local Government Board Inspector, held an inquiry into an application from the Swansea County Council for power to borrow 60,000*l.* for purposes of electric lighting and the erection of a dust-destructor house near the Strand; 750*l.* for the erection of a retaining-wall at the public slaughter-houses; and 150*l.* for the erection of urinals in different parts of the town. Amongst those present were Messrs. Manville (the Corporation electric expert), John Thomas (the town clerk), and G. Bell (the Borough Surveyor).

MICKLEHAM, SURREY.—The Parish Church of St. Michael, in whose graveyard the remains of the Rev. William Rogers, Rector of St. Botolph by Bishopsgate, were buried last week, was partly rebuilt in 1821 at a cost of nearly 2,300*l.*, under the superintendence of P. F. Robinson. About 1842 a north aisle was added by W. Shearburn, of Dorking; and the church has since been restored by the late Ewan Christian. It presents various features—including the chancel-arch and porch—of eleventh- and twelfth-century architecture: the "Old House," which has belonged for many years past to Mr. Rogers's family, was built in 1635-6. The parish is prettily situated at the foot of Box Hill, between Dorking and Leatherhead: the neighbouring Norbury and Juniper Hill are familiar, by name, to readers of Madame D'Arblay's "Diary and Correspondence." She was married in this church, and she and her husband resided for some while at Camilla-Lacey in the parish.*

ROLLS CHAPEL.—On Thursday last week, at a meeting of the Society of Antiquaries, Mr. Maxwell Lyte, Deputy Keeper of the Records, read a paper—illustrated with drawings made in the Office of Works, October, 1895—which was virtually a defence of that office in their pulling down of the chapel. In the course of the discussion, Mr. Micklethwaite strongly condemned the Office of Works' action; he also maintained that, as a consecrated building, the chapel should be removed under Parliamentary authority only. Mr. Maxwell Lyte mentioned the discovery within the past few days of remains of the chancel-arch, *temp.* Henry III., in the east wall, and of a lancet-window in the north wall. He said that the removal of the roof had weakened the stability of the north and south walls. In the result the President put no resolution, saying it was scarcely necessary in view of the Society's unanimous resolution of January 16 current; which was as follows:—"That the Society of Antiquaries of London learns with much regret that the walls of the Rolls Chapel are being destroyed, in spite of assurances given by the Deputy Keeper of the Public Records, and the officials of the Office of Works, that the building should be preserved, it being one of the most ancient n London."

BRISTOL MASTER BUILDERS' ASSOCIATION.—On the 22nd ult., at the Bristol Chamber of Commerce, the annual meeting of this association was held, under the presidency of Mr. George Wilkins. After the reading and confirming of the minutes of the last annual meeting, the secretary (Mr. Henry J. Spear) presented the annual report, which stated, amongst other matters, that the Council of the Institute of Builders informed the members of that Institute and of the Central Association of Master Builders that the "Form of contract and schedule of conditions of builders' contracts," sanctioned by the Royal Institute of British Architects, and now being issued by that body, was not approved by them, they having taken the opinion of eminent counsel on the subject. The form agreed to between the old Builders' Society and the Royal Institute of British Architects in 1870-71 is still available, and the Council of the Institute of Builders recommended members to refuse to adopt the new form above referred to.—Mr. George Humphreys, the treasurer, presented the audited accounts, and upon the motion of the President, seconded by Mr. William Church, it was resolved that the report and accounts be approved and adopted. Mr. George Wilkins moved, Mr. E. T. Hatherley seconded, and it was resolved by acclamation, that Mr. C. A. Hayes be elected President of the Association for the current year. Upon the proposition of Mr. C. A. Hayes, seconded by Mr. Councillor Bastow, it was unanimously resolved that Mr. August Krauss be elected Vice-President for the year. Mr. Councillor Cowlin moved, Mr. H. A. Forse seconded, and it was carried unanimously, that Mr. George Humphreys be re-elected treasurer for the current year. The election of the Executive Committee was proceeded with, and, upon the motion of Mr. A. Krauss, seconded by Mr. C. A. Hayes, a unanimous vote of thanks was accorded to Mr. George Wilkins for his conduct of the Association's work during the past year.—The annual dinner was held in the evening at the Royal Hotel, under the presidency of Mr. George Wilkins. There was a gathering of about eighty. Mr. E. T. Hatherley proposed "The Army, Navy, and Reserve Forces," and Mr. Lambert responded. Mr. C. A. Hayes gave the toast of "The Mayor and Corporation of Bristol," and welcomed Messrs. Bastow and Cowlin among them. He trusted that among the things the Council would do would be to remove the unsightly railings at the Hotwells. Mr. Bastow, Mr. W. Cottrell, and Mr. W. H. Cowlin replied. Mr. G. H. Wilkins proposed "The Architects, Engineers, and Surveyors." Mr. T. S. Pope replied. Mr. H. Williams also responded, and said the interests of builders and architects were bound up together. The majority of the architects in Bristol were animated with the desire to do justice to their employers and also to the builders. Mr. Frank Wills was also a responder to the toast, and said no one regretted more than he did underpaid work. Builders and architects had much in common, and it was to their mutual profit that good work should be carried out in their ancient city. The toast was also acknowledged by Messrs. A. Barrett and W. Cloutman. Mr. George H. Perrin gave the toast of "The National Master Builders' Association," and said that it was a most interesting body. He found that there were no fewer than 134 kindred societies similar to their own, all welded together, and two-thirds of that association reported their trade as satisfactory. Mr. A. Krauss (the President) replied, and said it was a matter for congratulation that the last year had been free from strikes, and he hoped there was a prosperous career in store for their trade. Mr. William Church also replied. Mr. George Humphreys proposed the toast of "The Kindred Associations." Mr. E. W. Wooster, Mr. Stephen Ambrose, and Mr. E. J. B. Mercer replied. Mr. W. H. Brown gave the toast of "Success to the Bristol Master Builders' Association." The President, in acknowledging the toast, said their Association was in a flourishing condition, and he did not think they could have better rules than they had. Strikes were very numerous, and the Conciliation Board had been found a safe way to deal with them. Mr. H. J. Spear (the Secretary of the Association) also responded. Other toasts followed.

LEEDS BUILDERS' EXCHANGE CLUB.—The annual dinner of the Leeds Builders' Exchange Club was held on the 24th ult., in Fairburn's Restaurant, Lower Briggate. Mr. W. Bower occupied the chair, and the company numbered about eighty. After the usual loyal toast had been honoured, Mr. Denton Houghton proposed the toast of the "Mayor and City Council." Councillor Vickers responded. The toast of "The members and officials of the Building Clauses Committee of the Corporation" was proposed by M. C. F. Wilkinson. He said the duty of that committee was to carry out the building by-laws without unnecessarily hampering the building trade, whose operations were so extensive and important. So far as the club was concerned, it would do its utmost to perpetuate the friendly feeling which existed between the committee and the builders. There was no reason why they should not work amicably together. The Streets and Sewerage Committee had reverted to the old system of letting sewerage to one contractor instead of three, and the result had been much inconvenience to builders, owing to the delay in carrying out the preliminary work. Councillor Batley responded. Mr. D. Hainsworth (building inspector) also replied, and referring to back-to-back houses, he said he considered them superior to the flat system. It was possible, however, at very little extra cost, to erect a satisfactory through house. Mr. J. Speight gave "the City and Trade of Leeds." Mr. E. Stead proposed "The Club," the objects of which, he said, were to bind members of the trade together for mutual protection and support, to promote excellence in their work, and by frequent intercourse and discussion, to keep themselves abreast of all that affected their industrial well-being. Mr. J. W. Frankland replied, and a smoking concert followed in the club buildings.

PREVENTION OF BOILER EXPLOSIONS.—Messrs. Young & Marten of Stratford (London) have patented a "boiler tell-tale," as illustrated in the cut. It is to be fixed on the top of the boiler, standing vertically above it and easily accessible, and quite separate from the flow and return pipes. The tap on it is to be tried before lighting the fire, and if there is any stoppage in the pipes or boiler through frost, the water will not flow from the tap. It is useful to have assurance of security by this means, though its adoption should not be a reason for dispensing with a safety-valve.

THE SANITARY INSTITUTE.—At an examination for Inspectors of Nuisances, held at Plymouth on Friday and Saturday, January 17 and 18, the following six candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of Inspectors of Nuisances:—J. L. Foot, Southampton; S. G. Pearce, Plymouth; T. Pearce, Plymouth; H. M. Teek, Weston-Super-Mare; H. T. G. Thomas, Bristol; A. Wilson, Sidmouth.

THE HOUSES OF PARLIAMENT.—It has not been found necessary to carry out any extensive series of works at the Palace of Westminster during the recess now drawing to a close. The annual cleaning of the stonework and fittings has of course been effected, and besides the sanitation in the vicinity of the House of Commons has been overhauled, an electric fan has been fitted with a view of making the atmosphere of the smoke-room cooler, and the decorative work in parts of the Speaker's official residence has been looked to. The colouring and embellishments of the beautiful crypt beneath St. Stephen's Hall have been renovated. For some time before the superstructure, then used as the House of Commons, was destroyed in the great fire of 1834, part of the crypt was used as the Speaker's state dining-room.—*Daily Chronicle.*

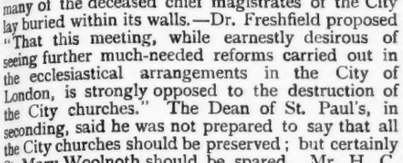
PRESERVATION OF CITY CHURCHES.—At the Mansion House, on the 22nd ult., a meeting in connexion with the City Church Preservation Society was held to protest against the threatened destruction of the Church of St. Mary Woolnoth. Alderman Sir Joseph Savory presided. The chairman observed that in 1863 an attempt was made to demolish the Church of St. Mary Woolnoth in order to enlarge the Post-office. A meeting was held to protest against it, and it was as successful as he hoped this meeting would be. It was now proposed to ruthlessly destroy the church and turn the site into a railway station. The church should be dear not only to the inhabitants of the Metropolis, but Englishmen in general, for many reasons. Long

* *Builder*, December 21, 1895.

* In 1824 was published Robinson's folio volume containing several views, plans, sections, &c., entitled "An attempt to ascertain the age of the church at Mickleham, with remarks on the architecture of that building."

before the Normans conquered England the site of St. Mary Woolnoth was a Christian sanctuary, and it had continued to be so ever since. The present building was erected after the Great Fire of London by Hawksmore, a pupil of Sir Christopher Wren, and merely as a fine example of a peculiar style of architecture it should be preserved as a monument of the piety of our forefathers. St. Mary Woolnoth was the church of the Lord Mayors of London, and many of the deceased chief magistrates of the City lay buried within its walls.—Dr. Freshfield proposed "That this meeting, while earnestly desirous of seeing further much-needed reforms carried out in the ecclesiastical arrangements in the City of London, is strongly opposed to the destruction of the City churches." The Dean of St. Paul's, in seconding, said he was not prepared to say that all the City churches should be preserved; but certainly St. Mary Woolnoth should be spared. Mr. H. C. Richards, M.P., supported the resolution, which was carried unanimously. Canon Newbolt proposed "That this meeting, while not opposed to the extension of the City and South London Railway, will resist by all means in its power the threatened destruction of the Church of St. Mary Woolnoth, for the purpose of making a railway station on the site." Mr. F. C. Penrose, President of the Royal Institute of British Architects, seconded, and Mr. J. Biddulph Martin supported. This was also agreed to, and the meeting closed with a vote of thanks to the chairman, proposed by Canon Benham and seconded by the Rev. Professor Shuttleworth.

BLAKE'S ASPHALTE-CONCRETE CULVERT.—This is a patent of the Limmer Asphalte Co. for a culvert for telegraph, telephone, and electric light wires. As will be seen from the illustrations, it consists of slabs of asphalte-concrete, laid in two courses, the upper course joggled at the ends and keyed at intervals, and circular conduits formed by the junction of the semi-circular grooves in the upper and lower slabs. It affords a ready means of forming a wire conduit, and taking up a portion of the upper course for repairing wires, with the least possible disturbance of the footpath or roadway.



PRESENTATION.—A presentation was made in the "Hamilton Room" of the Great Eastern Hotel, Liverpool-street, E.C., on the 22nd ult., to Mr. Charles Langbridge Morgan, M.Inst.C.E., on his retiring from the Great Eastern Railway to take up the appointment of Engineer-in-Chief to the London, Brighton and South Coast Railway. The presentation was made on behalf of the subscribers by Mr. John Wilson, M.Inst.C.E., Engineer-in-Chief to the Great Eastern Railway, and consisted of a silver tea and coffee service and salver, together with an album containing an illuminated inscription on vellum and the names of the subscribers.

BRANKSEA CASTLE DESTROYED BY FIRE.—Branksea Castle, situate at the mouth of Poole Harbour, the picturesque seat of Captain Balfour, was demolished by fire on the 26th ult. The Castle was originally built in the reign of Henry VIII., and was formally used as a fortress. Fire broke out in the billiard-room at the top of the main tower. The damage amounts to nearly 20,000*l.* The origin of the fire is unknown, but it is supposed to have been caused through the heating apparatus. The old oak staircase and panelling were destroyed.

THE COMMISSION OF SEWERS.—In replying to a vote of thanks accorded at the meeting of the Commission of Sewers on Tuesday last to Mr. H. T. Gordon, the Chairman, for his services during the past year, Mr. Gordon passed briefly in review the work of the year with respect to the Central London Railway. He was desirous that no unnecessary obstacle should be thrown in the way of the scheme of subways at the Mansion House, but the problem they had to solve was one of great difficulty. He thought the Committee had acted rightly in reserving to the Commission the right to make certain alterations in the plans of the staircases. It was difficult to see how they could spare a single inch of the pavements in the City, and yet it must be admitted that subways at that central point had been a desideratum for many years, and in course of time they would have perforce to be constructed. The railway scheme offered them an opportunity, which the Commissioners ought not to neglect, of getting this necessary improvement done.—In the course of subsequent proceedings a fresh attempt was made to get the arrangement entered into with the railway companies with regard to the approaches to the subways reconsidered. Mr. Deacon, who had a motion on the paper to rescind the resolution of December 17 agreeing to the report of the Committee, contended that the Committee had not given sufficient attention to the subject. He read a communication from Colonel Smith, the Police Commissioner, in which he stated that the traffic proceeding by the Mansion House into Princes-street was seriously restricted, while certain templates laid down to test experimentally the amount of obstruction likely to be caused by having the openings to the subways at that point, were in position. The traffic, particularly that of the omnibuses, was impeded, and the stream of traffic had been checked as far back as to the Mansion House Station.—Mr. Burmester explained, on behalf of the Chairman of the Committee, that a new template representing the alterations demanded by the Committee had yet to be put down. When that was done, it would be seen that fifty square feet had been gained for the carriage-way as compared with the template complained of. After considerable discussion, Mr. Deacon's motion was negatived on a division with twenty-six against and twenty-one for the motion. Some minor improvements suggested in Foster-lane and Wood-street were approved, and the recommendation of the Improvements Committee to abolish the City stone-yard from Lady Day, 1897, was accepted.

RESIGNATION OF THE ASYLUM ARCHITECT, MIDDLESBROUGH.—At a recent meeting of the Middlesbrough Asylum Committee, Mr. C. H. Howell, of London, tendered his resignation as the architect of the new asylum, and Mr. Wood (Mr. Howell's chief assistant) was appointed to the position. The resignation was caused by indisposition.

THE RESTORATION OF SALISBURY CATHEDRAL.—On Tuesday a meeting was held at Salisbury Town Hall in aid of the fund for the repair and preservation of the tower and spire of Salisbury Cathedral. The Mayor presided, and after a general statement as to the condition of the tower and spire, and an architectural review of the work required, by Sir Arthur Blomfield, the Bishop of Salisbury moved, "That the condition of the tower and spire of the cathedral rendered it necessary that steps should be taken with a view to its repair and preservation." This was seconded by the Hon. Percy Wyndham and adopted, and another resolution was agreed to inviting further subscriptions.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointments of Messrs. G. T. Billing, A. J. Field, and W. J. Perrin as Sanitary Inspectors in Holborn, Poplar, and Newington respectively, and the re-appointments of Messrs. Lamble and Webster as Sanitary Inspectors in Paddington. One-half of the salaries of these officers is payable by the London County Council, in accordance with the provisions of the Public Health (London) Act, 1891.

THE GOVERNMENT AND STATUE DECORATION.—We understand that the First Commissioner of Works has had under consideration the growing practice of depositing wreaths upon public monuments at certain anniversaries. In order to guard against any possible damage to the monuments confided to his charge by persons being allowed to fix these wreaths to the pediments of statues, the First Commissioner has determined that in all cases the wreaths shall be affixed by a qualified officer of the department, and, unless special arrangement be made, they should be sent to her Majesty's Office of Works on the day preceding that which it is desired to commemorate.—*Daily Chronicle.*

THE BUTTER MARKET, HEREFORD.—The patent self-locking glazing bar of Mr. Sam Deards, of Harlow, has been selected for glazing the Butter Market, Hereford, by the architect, Mr. J. Parker. The work is being carried out by Messrs. Cooke & Son, Hereford.

A WARNING TO OUR ADVERTISERS.—Some unprincipled person appears to be making a systematic attempt to impose on people advertising in this journal. The method is to call upon some one who has advertised for an engagement, to hold out a probability of the interview ending in an engagement, and then to borrow a small sum of money on the pretence of having left his purse at home. Under the circumstances he gets the loan, and of course is never seen again. Three instances of the successful practice of this form of imposture have come to our knowledge recently, and those who have advertised in this journal had better be on their guard against any one answering their advertisements in person and asking for a small loan.

THE LIVERPOOL BUILDING BY-LAWS.—At a recent special meeting of the Health Committee, held at Liverpool, under the chairmanship of Alderman Morgan, for the purpose of considering certain proposed amendments of the building by-laws, it was decided to recommend that no street in the city of Liverpool shall be of a less width than 36 ft. instead of 30 ft. as at present; and that all back passages are to be 9 ft. wide instead of 4 ft. It was explained that this is levelling up to the standard of the building by-laws in the out-townships.

CAPITAL AND LABOUR.

BUILDING TRADE, BLACKPOOL.—The Blackpool builders' workmen have asked for an advance of 1*d.* per hour for the year round, which would then make the rate of wages 9*d.* per hour. The masters are prepared to give an advance of ½*d.* per hour for the summer months, and ½*d.* per hour during the winter. In addition a new code of rules has been submitted, but the men as yet have not replied. On the 23rd ult. a majority of the members of the Master Joiners and Builders' Association met at the Palatine Hotel, Mr. W. Eaves presiding. A deputation from the Lancashire Federation of Building Trade Employers attended, and, after discussion, it was decided to become federated.

WAGES IN ABERDEEN BUILDING TRADES.—Several sections of workmen employed in the Aberdeen building trade are moving in the matter of obtaining an advance of wages. The operative plumbers have, it is understood, given notice to the employers of their intention to ask an advance of a penny per hour, to take effect in spring. The building masons—as distinct from monumental stonecutters—will, at their next meeting, have under consideration a proposal to lodge an application for an increased rate of wages. The operative carpenters and joiners have lodged a request with the masters' society for an advance of pay and certain alterations in the by-laws.

WAGES IN THE IRON TRADE.—A meeting of the Midland Iron Trade Wages Board has just been held at Dudley. The accountants' certificate stated that the returns of sales of iron made by the twelve selected firms showed that the net average price obtained during the months of November and December was 5*l.* 15*s.* 3*d.* It was resolved that the rate of wages for puddlers should continue at 7*s.* 3*d.* per ton, and the millmen's in proportion until April 4 next.

SCOTTISH BUILDING TRADES' FEDERATION.—The quarterly meeting of the Executive of the Scottish Building Trades' Federation was held on the 23rd ult., within the office of the Secretary, Mr. James L. Selkirk, C.A., Mr. John Adam, builder, senior Vice-President, in the chair. The Secretary reported the steps taken to bring the claims of the Federation under the attention of the various branches of the building trades throughout the country, and the progress made in assisting in the formation of local associations. The movement had awakened considerable interest, and there was every indication of a more complete organisation of the various trades in the near future. Arrangements were made for bringing the claims of the Federation under the attention of employers in those districts not yet organised, and for carrying out still more fully the objects contemplated by the Federation.

ARBROATH BUILDING TRADES' FEDERATION.—The Arbroath branch of the Scottish Building Trades' Federation held their first quarterly general meeting in the Y.M.C.A. hall on the 21st ult., Mr. D. R. Calder, builder, Chairman, presiding. The Secretary read a very satisfactory report of the progress of the branch since its formation. It was decided that the branch at once affiliate with the Glasgow Federation. The local branch of this Federation is being taken advantage of by the whole of the building trades to ensure united co-operation. The secretary is Mr. R. C. Farquhar, Hill-place.

LEGAL.

COUNTY COUNCIL AND DANGEROUS STRUCTURES.

AT the Westminster Police-court, on the 18th ult., Messrs. Reynolds & Eason, a firm of City surveyors, &c., were represented as owners of a house and cottage in Marsham-street, Westminster, and they appeared, under the Metropolitan Building Act of 1894, to answer the County Council complaint that the structures were dangerous.

Mr. J. W. Godfrey, for the County Council, asked the Court for an order for speedy demolition.

The defendants' representative said there was no danger, and time was wanted to get the tenants out, &c.

Mr. Dru-Drury, the District Surveyor, deposed that the walls of the property were bulging and cracked.

Mr. Sheil: Liable to fall down on the public?

Witness: Yes, at any time, and the house is not occupied, but the cottage, approached through a farrier's yard, is inhabited by a family.

The defendant's representative said the premises were coming down in due course.

Mr. Sheil ordered their demolition within fourteen days.

A QUESTION OF ANCIENT LIGHTS: WAITE *v.* NEWBERY.

At the Assize Courts, Reading, recently, before his Honour the Official Referee (Mr. Ridley), a case was opened in which judgment was to be given as to the amount of damage to be awarded for the obstruction of light to the window of the bar-parlour and the kitchen windows of the Central Hotel, Friar-street, Reading, the property of Mr. Charles Waite, builder, of Reading, owing to the building of a warehouse by Mr. Arthur Newbery, furniture dealer, Friar-street, Reading. The action was tried

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Kursaal (or place of assembly).....	Cheltenham Corp.....	100*l*.....	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Masonry, Piers, &c. High-street, Penydarren	Merthyr Tydfil U.D.C.	T. F. Harvey, Engr. to the Council	Feb. 4
Eight Houses, Pollit-street, Barnsley	.....	Wade & Turner, Archt. 10, Pitt-street, Barnsley	do.
Road Works, Wilson-street, Batley	.....	Marriott & Son, Surv. West Park-street, Dewsbury	do.
Pipe Sewer, Manchester Old-road	Middleton (Lancs) Corp	H. L. Hinnell, C.E. 41, Corporation-st. Manch'ter	Feb. 5
Ten Houses, &c. Chopwell, Lancs.	.....	W. Richardson, 15, Glossop-street, High Spen	do.
Workhouse Dining Hall	Cork Union	Jno. Cotter, Clerk	Feb. 6
Sewerage, near Preston	Longridge D.C.	T. S. McCallum, C.E. 4, Chapel-walk, Manchester	do.
Norway Granite Kerb, &c.	Gray's Thurrock U.D.C.	A. C. James, Surv. High-street, Grays	do.
Lock-up, Kinkry Hill, Carlisle	Cumberland C C.	G. D. Oliver, Coun. Archt. 5, Lowther-st. Carlisle	do.
Road Works, Locking-road	Weston-super-Mare U.D.C.	H. Nettleton, C.E. Weston-super-Mare	Feb. 7
Sewerage Works, Penrhyn	Conway R.D.C.	T. B. Farrington, Engr. Conway	do.
Primitive Methodist Schools, Hanley, Staffs.	.....	R. Scrivener & Sons, Archt. Hanley	do.
Hall, Waterside, Derry	.....	Wm. Barker, Archt. 25, Orchard-st. Londonderry	do.
Two Houses, &c. Castleragh-street, Barnsley	.....	Wade & Turner, Archt. 10, Pitt-st, Barnsley	Feb. 8
School Residence, Maryborough, Ireland	.....	Rev. E. L. Eves, Rectory, Maryborough	do.
Three Houses, Booth Town, Halifax	.....	Medley Hall, Archt. 29, Northgate, Halifax	do.
Houses, Tolcarne Estate, Newquay, Cornwall	.....	Wm. J. Jenkins, Archt. Bodmin	do.
*Shelter in Morrab Gardens	Penzance Town Coun.	Borough Surveyor	do.
Twelve Cottages, Vauxhall-road	Wigan Corporation	Town Clerk	do.
Levelling, &c. Denmark-street and others, Wakefield	Sandal Magna U.D.C.	A. Fawcett, C.E. Old Town Hall, Wakefield	do.
Wood Paving Blocks (2,000 yds)	Margate T.C.	A. Latham, C. E. 15, Cecil-square, Margate	Feb. 10
Additions to School, Vron	Llangollen School Bd.	Davies & Moss, Architects, Wrexham	do.
Shop and Warehouse	Aberaychan Co-op. Soc. Lim.	J. Maggs, Secy. Glasgow-House, Aberaychan	do.
*New Ale Stores, Watford	Benskin's Watford Brewery, Lim	Benskin's Brewery, Watford	do.
Sewer and Drains, West Quay	Southampton Corp.	W. B. G. Bennett, Borough Surveyor	Feb. 11
*Kerbing, Tar Paving, &c.	Lewisham B. of W.	The Surveyor, Vestry Hall	do.
*Stoneware Pipe Sewers	Southall - Norwood U.D.C.	H. R. Felkin, Clerk's Offices	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Underground Sanitary Conveniences	Southend-on-Sea Corp.	H. Harlock, Clarence-rd. Southend	Feb. 11
*Pipe Sewer	do.	do.	do.
*Works and Materials	St. John (Hampstead) Vestry	The Surveyor, Vestry Hall	Feb. 12
*Making-up and Paving Roads	Fulham Vestry	C. Botterill, Town Hall	do.
People's Palace, Bridlington Quay, Yorks	Bridlington People's Palace, &c. Co.	J. Earnshaw, Archt. Wellington-road, Bridlington Quay	do.
*Works and Materials	Battersea Vestry	The Surveyor, Lavender-Hill, S.W.	do.
Making-up Choppington Colliery-road	Bedlingtonshire U.D.C.	C. D. Forster, Clerk, 24, Grainger-st. West, Newcastle-on-Tyne	do.
Stone Pitching (4,000 yards), Blagdon, Somerset		Pethick Bros. Blagdon, B.S.O.	do.
*Iron and Stoneware Pipe Sewers	Watford U D.C.	14, High-st. Watford	do.
*Erection of Hospital	Huddersfield Corp.	E. Thomas & Sons, 7, Queen Anne's-gate, SW.	do.
Primitive Methodist Church, Blackhill, Durham	.....	Wm. Ralstrick, 10, Westview, Blackhill	Feb. 13
Thirty-nine Cottages	Nenagh (Ireland) Union	J. H. Sheehan, Clerk	do.
Boiler House, &c.	Kingsbridge (Devon) Union	J. H. Square, Clerk, Miller's-ct. Kingsbridge	do.
*Bankruptcy Offices, Bristol	Com. of H.M. Works	12, Whitehall-place, S.W.	Feb. 14
*Erection of Gymnasium	Saffron Walden Grammar School	Ackland & Son, Saffron Walden	do.
Villa, Dinas Powis, Cardiff	F. W. Smart	W. H. D. Caple, Archt. 1, St. John's-sq. Cardiff	Feb. 15
*Ornamental Lamp Columns	St. Mary, Islington Vestry	J. P. Barber, Vestry Hall	Feb. 17
*Reconstruction of Main Sewers	Berkhamsted R.D.C.	J. Lemon, 9, Victoria-st. Westminster	do.
Alterations, &c. to Hospital	Blackburn Corp.	G. W. Lund, C.E. Municipal Offices, Blackburn	do.
Hospital Buildings, Manston Hall	Leeds Corp.	City Engineer	Feb. 18
*Works and Repairs	Com. of H.M. Works	12, Whitehall-place, S.W.	Feb. 20
*Construction of Aqueduct	Birmingham Corp.	J. Mansergh, 5, Victoria-st. Westminster	Mar. 4
Pavilion at Cricket Ground, Harrogate	.....	Geo. Bland, Archt James-street, Harrogate	No date
Alterations to National Schools, Wood Top, Burnley	.....	Thos. Bell, Archt. Burnley	do.
Residence, Ilkley, Yorks	.....	Isitt & Co. Architects, Prudential-buildings, Bradford	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Sanitary Inspector	Surbiton U.D.C.	100*l*. per year	Feb. 8
*Clerk of Works	Straits Settlements	150 dollars per month, &c.	Feb. 10
*Draughtsman	Whitechapel Bd. of W.	2*l*. 5s. weekly	Feb. 13
*Surveyor's Clerk	do.	2*l*. weekly	do.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. *Contracts, pp.* iv., vi., viii., x. *&* xxi. *Public Appointments, p.* xviii.

before Mr. Justice Kekewich at the High Court of Justice, Chancery Division, in July last.

Mr. Stewart Smith, instructed by Mr. C. G. Shaw, appeared for the plaintiff; and Mr. F. W. Sherwood, instructed by Mr. W. Sherwood, appeared for the defendant.

Mr. Stewart Smith said they appeared there solely for the purpose of ascertaining what damage the plaintiff sustained by the defendant blocking the windows of the plaintiff's licensed premises. He read the judgment delivered by Mr. Justice Kekewich on July 13 last, and said the question between the parties was one of obstruction of light, and the best way to explain the matter, he thought, was to produce models of the buildings in question. Where there was formerly a wall 7 ft. high, a building 19 ft. 2¼ in. had been erected.

Mr. G. W. Webb, architect, of Reading, said that in January, 1888, he prepared plans for the alteration of the Central Hotel, Friar-street. He then made a careful survey of the premises. The models produced of the plaintiff's property represented generally the condition of the defendant's buildings before they were pulled down and after they were rebuilt. He had examined the kitchen and the bar-parlour since the defendant's new buildings were erected, and he found that the loss of light to the kitchen was 23 deg. of direct sunshine and light, and 31 deg. of cast shadow; and to the bar-parlour, 6 deg. of direct sunshine and light, and 31 deg. of distributed light. The effect of the new building of the defendant's had been substantially to diminish the light to the kitchen windows, and to make the room less convenient for the purposes of business. The bar-parlour was also affected, but not so seriously as the kitchen. He assessed the damage to the premises consequent upon the obstruction at 20*l*. per annum, one-fifth of the present rent, or at 623*l*., thirty years' purchase. Friar-street property was yearly increasing in value.

Mr. Joseph Morris, architect and surveyor and County Surveyor, said he had had nearly forty years' experience. He confirmed all that Mr. Webb had said with regard to the plans.

Mr. Charles Waite, the plaintiff, said that before the alteration the sky could be seen from each of the rooms mentioned, but now the sky was completely blocked out.

Mrs. Annie Eleanor Mott, wife of the tenant of the Central Hotel, said they had had a very good light indeed in the kitchen and the bar-parlour before the new buildings were put up. They had to use gas now.

Other witnesses for the plaintiff having been examined,

Mr. Sherwood, in opening the case for the defendant, said the evidence he should call would qualify to a certain extent the evidence given by his friend's witnesses. An exaggerated value had been placed on the house by one of the witnesses especially.

M. John Egginton said he was an autioneer, valuer, and estate agent, at 150, Friar-street, Reading, two doors from the hotel. He sold the house to Mr. Waite for 1,175*l*. His experience covered thirty-three years. The sale to Mr. Waite took place in 1887. He valued the house then. He had been in the house recently. Witness thought the house had three stories, but on going over it he found it only possessed two. He should put the present value of the house at 2,300*l*., 300*l*. of which he would put for the licence. If the tenant had the option of selling the house to-morrow he should increase the amount by 500*l*. or 600*l*. He should assess the house at 22½ years' purchase, not thirty years. He was in the bar-parlour that day, and, sitting away from the window he read the small type in a newspaper with ease.

Cross-examined: He admitted the possibility of there being some damage. He had no doubt there was a diminution of light.

The case was then adjourned till the following day.

Before the resumption, the Official Referee inspected the premises with the architects on both sides.

Mr. F. W. Albury said he was the defendant's architect for the new buildings. He put the value of the plaintiff's premises at 2,250*l*. He had been in the bar-parlour and the kitchen lately. He did not notice any great difference in the light now than formerly. They were always dark rooms. He should not put the total loss at more than 2*l*. a year. He would capitalise the amount at twenty-two or twenty-five years' purchase.

Mr. Charles Smith, architect, of Friar-street, said he had had thirty-five years' experience in Reading. He considered the rental, 100*l*. a year, was quite adequate. The capital value of property of that kind he should put at 22½ years' purchase, which would work out at 2,250*l*. He did not think the loss of light would affect the commercial value of the house at all.

Mr. Sherwood, in addressing the Official Referee for the defendant, while admitting that there had been an interference with the plaintiff's light, asked the Referee not to accept the plaintiff's extravagant claim.

Mr. Stewart Smith, for the plaintiff, contended that there was a substantial diminution of light, and said that as the gloss on the defendant's bricks became worn off they would absorb more light and would reflect less than at present. Mr. Smith asked the Referee to assess the damages on a thirty years' purchase; but subsequently, after some remarks by the Referee, he said that his client would no doubt be willing to accept it on a twenty-five years' purchase.

The learned Referee, in giving judgment, said he thought the plaintiff's claim was too high. These premises were certainly never well-lighted, but still they did enjoy the direct sunlight; the sky was visible, and they were not subject to the infliction of a dense brick wall raised to a height of 19 ft. There was, therefore, as Mr. Justice Kekewich termed it, obviously a substantial interference with the light. But it was only one-third of the bar-parlour window that was an ancient light, so that there was but a small interference with that window. He did not agree with Mr. Webb's view, or rather with the result of his calculation. He could not for a moment believe that this freehold, standing, as it did, on an advantageous site, with a great many probabilities in the future, was worth one-fifth less by reason of this interference with the light. But if he did, he could not assess the damages on a thirty years' purchase, nor could he calculate it at twenty-five. He thought that about one-fourth of the plaintiff's claim was about what he ought to recover. But it was impossible to assess the damages in a case like this down to a few shillings and pence. In addition to the ordinary damage, the loss of light was an inconvenience. He had, therefore, come to the conclusion that he should be acting very fairly if he reported to Mr. Justice Kekewich that the damages the plaintiff was entitled to recover were 150*l*.

The Court then rose.

MEETINGS.

FRIDAY, JANUARY 31.

Institution of Mechanical Engineers.—Annual General Meeting (concluded). 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. F. A. Lart on (1) "Ironfounding in Green Sand;" (2) "Malleable Cast-iron." 8 p.m.

SATURDAY, FEBRUARY 1.

Sanitary Inspectors' Association.—Mr. J. F. Skinner on "Some Difficulties encountered by Sanitary Inspectors in the Discharge of their Duties." 6 p.m.

Edinburgh Architectural Association.—Visit to Bruntsfield School.

St. Paul's Ecclesiological Society.—Annual Meeting, to be held at the Chapter House. 2.30 p.m.

SUNDAY, FEBRUARY 2.

Sunday Lecture Society.—Dr. T. W. Drinkwater on "Rubbish." Illustrated by experiments and oxy-hydrogen lantern. 4 p.m.

MONDAY, FEBRUARY 3.

Royal Institute of British Architects.—(1) To announce the name of the person the Council propose to submit to Her Majesty the Queen as a fit recipient of the Royal Gold Medal, 1896; (2) To read (under the management of the Art Standing Committee) papers on "Wood-carving and Wood-carvers," by Messrs. W. H. Romaine-Walker, W. Aumonier, and J. E. Knox. 8 p.m.

Royal Academy of Arts.—Lectures on Architecture, by Professor Aitchison, A.R.A.—"Romanesque Architecture." I. 8 p.m. (Postponed from last Monday.)

Society of Arts (Cantor Lectures).—Dr. J. A. Fleming, F.R.S., on "Alternate Current Transformers." III. 8 p.m.

Surveyors' Institution.—Mr. R. F. Colam on "An Improved Method of Settling Disputes as to Rights of Way." 8 p.m.

Society of Engineers.—(1) The President for the past year, Mr. William George Peirce, will present the premiums awarded for papers read during the year; (2) The President for the year 1896, Mr. Samuel Herbert Cox, will deliver his Inaugural Address. 7.30 p.m.

Clerks of Works' Association.—Annual Dinner, Holborn Restaurant.

Northern Architectural Association.—Mr. Blunden on "English Church Architecture."

TUESDAY, FEBRUARY 4.

Institution of Civil Engineers.—Paper to be further discussed:—"Recent Developments in Gas Engines," by Mr. Dugald Clerk. 8 p.m.

Society of Arts (Applied Art Section).—Mr. F. Inigo Thomas on "The Garden in Relation to the House." 8 p.m.

Glasgow Architectural Association. — Association Travelling Studentship essay, by Mr. G. Gunn. 8 p.m.

Society of Biblical Archæology.—Mr. P. Le P. Renouf on "The Symbols in Funeral Stelæ." 8 p.m.

WEDNESDAY, FEBRUARY 5.

Society of Arts.—Mr. F. H. Cheesewright on "The Mexican Drainage Canal." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

Liverpool Engineering Society. — Mr. W. G. P. Macmuldrow on "Some Instruments used for Measuring and Recording Electrical Energy." 8 p.m.

Royal Archæological Institute of Great Britain and Ireland.—(1) Mr. Charles E. Keyser, M.A., F.S.A., on "Recently Discovered Mural Paintings at Willingham Church, Cambridgeshire, and elsewhere in the South of England"; (2) Mr. Talfourd Ely, M.A., F.S.A., on "A Cyprian Terra-cotta." 4 p.m.

St. Paul's Ecclesiological Society.—The Rev. W. F. Creeny on "Foreign Incised Slabs," illustrated by Rubbings. 7.30 p.m.

THURSDAY, FEBRUARY 6.

Royal Academy of Arts.—Lectures on Architecture, by Professor Aitchison, A.R.A.—"Romanesque Architecture." II. 8 p.m.

Society of Antiquaries. 8.30 p.m.

FRIDAY, FEBRUARY 7.

Architectural Association.—Mr. Sidney H. Wells on "Technical Institutes." 7.30 p.m.

SATURDAY, FEBRUARY 8.

Architectural Association.—First Spring Visit, to the National British Gallery, Grosvenor-road, Millbank. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

22,509.—FLUSHING TANKS: *E. Howard.*—In tanks for flushing automatically at intervals, a scoop-shaped tipper is pivoted at the top of such tank so as to be in equilibrium when in its normal position and full of water. The tipper is filled from a cock above it, and overflows into the tank, which, on being filled, rises one or more floats which are suitably arranged to press against the tipper, emptying it, and starting the syphonage. The small increment of water is aided in starting the syphonage by making the syphon with a double curve or undulation at the bend.

25,088.—DOOR-CLOSER: *J. Potter.*—An automatic door-closer and hinge combined. Consists of two pieces of metal or flaps bent at right angles and jointed so as to form a double butt hinge. Two pillars are fixed at the back of the hinge, between which a spring, having a small roller at one end, is attached by a pin running through two claws. The roller runs on a cam-shaped projection formed on the other part of the hinge, and enters a detent when the door has reached the angle at which it is required to remain. Suitable means are provided for regulating the position of the cam and also the action of the spring.

3,302.—FIREGRATES: *H. Wilcke.*—Refers to firegrates or stoves; being an improvement of the type set forth in a former specification, No. 9,984-93. Comprises a firegrate proper, with brick-work walls, constructed with passages or flues, through which the gases from the fire pass, an opening about the fireplace in which a sliding-door is fixed for covering or exposing the fire at will, an enclosing casing and mantlepiece, constituting a chamber within which the grate is set, and a chimney-pipe and enclosing perforated casing.

3,375.—PLANING MACHINE: *W. Whitley.*—Relates to machines for planing, cutting, or shaping strips of wood of the class known as "mould-forming machines," wherein rotary cutters are employed for simultaneously operating on the outer surfaces of said strips. In order to increase the output of the machine by cutting the four longitudinal surfaces of two pieces of wood at the same operation, an additional spindle or vertical shaft carrying suitable cutters is made to rotate between the two ordinary cutter-shafts. The strips of wood move in guides, and are presented to the central cutter which operates upon the inner edges of both of them, while the ordinary cutters operate upon the outer edges.

3,608.—BRICKS: *F. Young.*—A process of manufacturing firebricks, tiles, or building bricks, consisting in adding to nearly pure silica just sufficient alumina, alkali and moisture to enable the mass to firmly cohere.

21,590.—WINDOW FASTENER: *L. Hofheimer.*—Consists of two plates hinged together, one of which is adapted to be secured to a sash rail, and the other to be held down over the rail of another sash by means of a pin passing through eyes or staples.

22,017.—CHIMNEY TOPS: *R. Marston.*—In wind rotated chimney tops or ventilating terminals, the pivot on which the cowl or hood revolves is arranged near the top of the cowl, and some distance above the top of the flue being supported on a U-shaped bridge. A reservoir for holding oil surrounds and automatically lubricates the pivoted portion.

NEW APPLICATIONS FOR LETTERS PATENT.

JANUARY 13.—822, S. Thompson and others, Syphon-cisterns and Water-waste Preventors.—875, W. Waller, Construction of Tiles.—881, T. Buck, Cutting Clay or other like Material into Bricks or Blocks.

JANUARY 14.—920, C. White, Laying and Testing Sewer Pipes.—935, A. Pullan, Machinery for Moulding and Pressing Bricks.—978, E. Edwards, Self-closing Door Hinges.

JANUARY 15.—1,001, G. Grundy, Decorating Tiles, Plates, &c.—1,072, D. Rees, Ventilating Apparatus.

JANUARY 16.—1,081, The Whitecross Co., Limited, and W. Carson Nail.—1,094, G. Cartland & J. Ross, Heating Stoves.—1,155, T. Ford, Chandeliers, Gasaliers, Gas Pendants, Gas Brackets, &c.

JANUARY 17.—1,185, E. Baldwin, Apparatus for Drilling Rock, Stone, &c.—1,196, J. Whitefield, Hinges.—1,120, T. Willard, Roofs for Buildings.—1,248, L. Aston, Window Sashes.

JANUARY 18.—1,265, E. Jackson, Power Mortising and Boring Machines.—1,266, A. Sutton and W. Cotterill, Waste-water Closet Apparatus.—1,278, A. Engelsmann, Folding Ladder.—1,297, O. Perkins and A. Vestal, Fireplaces.—1,301, H. Dakin, Syphon Cisterns.—1,317, J. Garner, Closed Cistern Valve.

PROVISIONAL SPECIFICATIONS ACCEPTED.

22,320, F. Rider and H. Colliver, Spring Hinge.—23,460, T. Blandford, Safety-valve Top or Cock to Relieve the Pressure and Prevent Explosions in Kitchen Boilers.—23,705, T. Smart and C. Bennett, Kilns for Burning Bricks, &c.—24,025, R. Marshall, Water-waste Preventing Tanks, Cisterns, &c.—24,186, T. Barnes and J. Mahoney, Door Checks.—24,258, H. Gardner, Disinfecting Water-closets, &c.—24,518, Tonks, Limited, and J. Tonks, Door and other Hinges.—24,565, C. Jones, Fasteners for Windows, &c.—24,596, R. Thorburn, Tiles, &c.—24,628, F. Grœnert, Draught and Weather Excluder.—24,667, J. Heathman, Ladders and Portable Scaffolds.—24,668, S. Leech, Tiles, &c.—24,722, G. Fuery, Pavements, Steps, &c.—24,845, F. Schweitzer, Construction of Ceilings.—24,858, J. Maddock, Kiln Hook for placing Pottery-ware during Fire.—24,877, J. Heuermann, Machine for Levelling Roads and other Earth Surfaces.—24,904, W. Shoosmith, Back Pressure and Tidal-valves for Drains.—24,992, A. Perkins, Ladders.—25,020, W. Wallace, Water-closet Seats.—25,035, A. Latto, Door Bell and Gong.—27, C. Ower, Construction and Working Arrangements of Casement Windows.—351, D. Johnston, Building Construction.—353, J. Jones, Preventing Pipes Bursting through Frost.—552, W. Youlten, Water Bars and Casements.—553, W. Youlten, Casements.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

5,064, T. Claughton and others, Water-closets.—5,274, S. Hellyer, Lavatory basins, &c.—7,078, T. Rimmer, Mitre cutting machine.—7,530, E. Green, Socketted pipes.—12,808, W. M'Intosh, Windows and their frames.—12,855, M. Butcher and A. Cameron, Window-sash apparatus.—23,479, S. Dix, Water-closet pans.—23,866, E. Smedley, Kitchen ranges, &c.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

Jan. 9.—By DOBSON & SON (at Bradford).

Eccleshill, Yorks.—"Gate House Farm," 10 a. 0 r. 14 p., f. £1,460

Jan. 14.—By J. WILLSON & SON (at Alford).

Hogsthorpe, Lincs.—Freehold brick and tile works and "Old Mill Yard," and 7 a. 0 r. 38 p., f. 270

Jan. 15.—By NORMAN & BOWEN (on the premises).

Hampstead-rd.—No. 209, beneficial lease, u.t. 11 years, r. 85*l.* 240

By BIRTWISTLE & BECKETT (at Blackburn).

Blackburn, Lancs.—Church-st., "The Old Bull" Hotel, g.r. 120*l.* 11,500

Jan. 16.—By SIM & RANDALL (at Forest Gate).

Forest Gate.—Nursery-lane, a block of nursery land, u.t. 910 yrs., g.r. 4*l.* 170

By BRANCH & LEETE (at Liverpool).

Liverpool.—Lime-st., "The Alexandra Theatre," with three shops, u.t. 64½ yrs., g.r. nil, r. 1,575*l.* 30,100

Jan. 18.—By W. DREW & SON (at Carnarvon).

Llanbeblig, Carnarvon.—"Caecinamon House" and two plots of land, 4 a. 1 r. 33 p., f. 3,200

"Waterloo Port Cottage" and 29 perches, f. 480

Jan. 20.—By BARBER & HARDING.

Wandsworth.—6, Cecil-ter., u.t. 95 yrs., g.r. 7*l.*, r. 35*l.* 300

By MADDISON, MILES, & MADDISON (at Harleston).

Weybread, Suffolk.—"Weybread Heath House," public-house and 20 a. 3 r. 12 p., f. 2,200

Jan. 21.—By FURBER, PRICE, & FURBER.

Edgware-rd.—No. 147, with stabling, u.t. 24½ yrs., g.r. 16*l.* 10s., r. 183*l.* 16s. 1,375

Lambeth.—55, New Cut and 5, Little Windmill-st., f.; 3 and 4, Little Windmill-st., u.t. 11½ yrs., g.r. 18*l.*, r. 177*l.* 1,300

By REYNOLDS & EASON.

Finsbury.—42 and 44, Wilson-st., and warehouse in rear, f., r. 190*l.* 3,930

Hampstead.—46, Heath-st., f., subject to a rent-charge of 6*l.* 1,050

By C. P. WHITELEY.

Belgravia.—127, Ebury-st., u.t. 27 yrs., g.r. 2*l.*, r. 110*l.* 1,360

Knightsbridge.—2, Charles-st., u.t. 21⅝ yrs., g.r. 6*l.* 6s., r. 65*l.* 540

By BEAN, BURNETT, & ELDRIDGE.

Hyde Park.—42, Bryanston-sq. and 42, Bryanston-mews, u.t. 13 yrs., g.r. 52*l.* 10s., e.r. 450*l.* 1,500

Fulham.—Buer-rd., f.g.r. 35*l.*, reversion in 98 yrs. 1,005

Burlington-rd., f.g.r. 50*l.* 15s., reversion in 98 yrs. 1,345

King's-rd., "Vine Cottage," f., r. 23*l.* 8s. 300

King's-rd., warehouse and business premises, f., r. 85*l.* 1,500

Burlington-rd., f.g.r. 6*l.*, reversion in 98 yrs. 160

By GLOVER & HARRISON (at Balham).

Balham.—54 and 56, Rossiter-rd., u.t. 78 yrs., g.r. 16*l.*, e.r. 64*l.* 530

By W. WILSON & SON (at Manchester).

Swinton, Lancashire.—"Swinton Old Hall" and 15 a. 1 r. 10 p., f. 5,350

By W. H. HANSON (at Gainsborough).

Kexby, Lincs.—Enclosures of land, farm buildings, &c., 120 a. 0 r. 36 p., f. 1,675

By COOK & BIRMINGHAM (at Tiverton).

Tiverton, Devon.—"Tidcombe Rectory" and 28 a. 1 r. 27 p., f. 4,600

Jan. 22.—By J. GREEN & SON (at Hammersmith).

Hammersmith.—12, Southerton-rd., u.t. 70 yrs., g.r. 6*l.* 280

19, Cambridge-rd., u.t. 42½ yrs., g.r. nil. 240

Gunnersbury.—62 and 64, Victoria-ter., u.t. 76 yrs., g.r. 10*l.* 480

By PHILIPPS & NORFOLK (at Deptford).

Deptford.—16 and 18, Oureboro-rd., u.t. 71 yrs., g.r. 6*l.* 300

2, 3, and 4, Blackhorse-rd., u.t. 85 yrs., g.r. 10*l.* 10s. 190

By J. R. PARKINSON (at Haslingden).

Helmshore, Lancs.—"The Bridge End Hotel," f., r. 80*l.* 3,100

Farmhouse, six cottages and 12 a. 2 r. 3 p., f. and c. 2,700

Jan. 23.—By HERRING, SON, & DAW.

Islington.—5, Crossley-ter., beneficial lease for 4 yrs., r. 60*l.* 125

By DOUGLAS YOUNG.

South Lambeth.—55, Thorne-rd., f., r. 40*l.* 580

By CANE & CO.

Catford.—26, Rushey-green, f., r. 30*l.* 420

By CHESTERTON & SONS.

Old Kent-rd.—11, 13, and 15, Peckham Park-rd., f., r. 120*l.*; and f.g.r. 30*l.*, reversion in 67 yrs. 2,550

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I. ..load	10/0/0	18/0/0
Sequoia, U.S. ft. cu	1/10	2/0
Ash, Canada load	3/5/0	4/10/0
Birch, do.	3/15/0	4/15/0
Elm, do.	4/0/0	5/5/0
Fir, Dantsic, &c.	2/0/0	3/10/0
Oak, do.	3/15/0	4/15/0
Canada	6/10/0	8/0/0
Pine, Canada red	0/0/0	0/0/0
Do. Yellow	2/15/0	5/5/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	5/0/0	6/10/0
Wainscot, Riga, &c., log	2/15/0	5/0/0
Odessa, crown....	2/15/0	5/0/0
Deals, Finland 2nd & 1st std 100	7/0/0	8/10/0
Do. 4th & 3rd ..	7/0/0	8/0/0
Do. Riga	7/0/0	8/0/0
St. Petersburg, 1st yellow ...	9/10/0	12/0/0
Do. 2nd yellow	7/10/0	9/0/0
Do. white	8/0/0	9/10/0
Swedish	7/0/0	15/10/0
White Sea.....	7/15/0	14/15/0
Canada, Pine 1st	21/0/0	25/0/0
Do. do. 2nd....	16/0/0	17/0/0
Do. do. 3rd, &c.	8/0/0	10/0/0
Do. Spruce, 1st..	9/0/0	20/10/0
Do. do. 3rd and 2nd	6/15/0	7/10/0
New Brunswick	6/0/0	7/0/0
Battens, all kinds	5/0/0	20/0/0
Flooring boards, sq., 1 in. prep. 1st.....	0/9/6	0/14/6
Do. 2nd	0/6/6	0/11/6
Other qualities—	0/4/6	0/7/6
Cedar, Cuba ..ft.	¼	¼
Honduras, &c.	⅓	¼
Mahogany, Cuba	⅓	⅙
St. Domingo, cargo av.	⅓	1/0
Mexican do. do.	¼	¼
Tobasco do. do.	¼	⅙
Honduras do..	¼	⅙
Box, Turkey ton	4/0/0	15/0/0
Rose, Rio	7/0/0	16/0/0
Bahia	6/0/0	15/0/0
Satin, St. Domingo	0/0/5	0/1/0
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian....	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2,6,6	0/0/0
Bar, Welsh, in London	5/12/6	5/15/0
Do. do. at works in Wales.....	5/2/6	5/5/0
Do. Staffordshire, in London.....	6/0/0	6/10/0
COPPER—British cake and ingot	45/5/0	45/15/0
Best selected ..	46/5/0	46/15/0
Sheets, strong..	51/10/0	0/0/0
Chili bars	42/13/0	42/18/0
YELLOW M'TAL lb	0/0/4½	0/0/4⅝
LEAD—Pig		
Spanish ....ton	11/3/9	0/0/0
English com. brands	11/5/0	11/6/3
Sheet, English, 6 lbs. per sq. ft. and upwards ..	12/10/0	0/0/0
Pipe	12/10/0	0/0/0
ZINC—English sheet .....ton	18/5/0	18/10/0
Vieille Montagne	18/15/0	0/0/0
TIN—Straits.....	59/15/0	60/5/0
Australian.....	60/10/0	60/17/6
English Ingots.	63/0/0	63/10/0
Banca	60/10/0	61/15/0
Billiton	59/10/0	59/15/0
OILS.		
Linseed .....ton	19/15/0	20/7/6
Cocoanut, Cochin	27/0/0	0/0/0
Do. Ceylon	22/15/0	0/0/0
Palm, Lagos	22/0/0	0/0/0
Rapeseed, English pale.....	25/5/0	25/10/0
Do. brown	23/15/0	24/0/0
Cottonseed ref. .	17/10/0	18/0/0
Oleine.....	19/10/0	20/10/0
Lubricating, U.S.	6/6/0	9/6/0
Do. black	4/9/0	6/6/0
TAR—Stockholm barrel	1/0/0	0/0/0
Archangel.....	0/14/6	0/15/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish lists in which the accepted Tender is below £100.]

BEVERLEY.—Accepted for alterations, &c., to house and shop, Market-place, for Messrs. G. Hobson & Son. Messrs. Hawe & Foley, architects, North Bar-street, Beverley. Quantities not supplied:—

George Pape, Walkergate, Beverley £152 10

BRENTFORD.—For alterations and re-decorations to "The White Hart," for Messrs. Fuller & Co., Griffin Brewery, Chiswick. Mr. J. Hume, architect and surveyor, Chiswick:—

Hunt	£164	Dorey & Son.....	£156
Rogers	158	Foord & Son	155
Barnes	158		

BRENTFORD.—For alterations and re-decorations to "The Bull," for Messrs. Fuller & Co., Griffin Brewery, Chiswick. Mr. J. Hume, architect and surveyor, Chiswick:—

Hunt	£123	Adamson & Son	£119

BROMLEY (Kent).—For the execution of sewerage works, Crofton, for the Rural District Council of Bromley, Kent. Messrs. A. Williams & Son, C.E., 18, Great George-street, Westminster, S.W.:—

W. J. Botterill	£7,810	Thomas Adams	£5,084
J. C. Trueman.....	7,390	A. T. Calley.....	5,000
Joseph Gloag	5,902	Edmund Iles, Mitcham Common, Surrey *.....	4,800
Wilkinson Bros.	5,804	John Jackson	4,749
John Band	5,554	Fry Brothers	4,577
George Osenton.....	5,449	William Woodham.....	4,397
George Bell	5,333		

* Accepted.

HALIFAX.—Accepted for alterations, &c., to school buildings, Caddy Field, for the School Board. Mr. J. F. Walsh, architect, Lancashire and Yorkshire Bank Chambers, Halifax. Quantities by the architect:—

Plastering and Slating.—Rushworth & Firth, New Bank, Halifax £140

HAMPTON (Middlesex).—For the erection of a house and shop, Station-road, Hampton, Middlesex, for Mr. Thomas Aldrich. Mr. H. J. Blake, architect, Isleworth:—

W. Munday	£1,314 8 6	J. Wright	£950 0 0
J. Singleton & Sons	1,195 0 0	A. Wright, Hampton (accepted)	925 0 0
R. Richardson	1,150 0 0		
King & Major	959 17 0		

LEIGH (Lancs.).—Accepted for the construction of a barrel culvert on the sewage farm, for the Leigh and Atherton Joint Sewerage Board. Messrs. Banks, Fairclough, & Stephen, engineers, Leigh:—

George Bell, 23, Corporation-st, Manchester .. £1,153 13 5

LLANDAFF.—For the erection of school buildings, for the Governors of Howell's Glamorgan County School. Mr. Geo. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. J. W. Rodger, surveyor, 14, High-street, Cardiff:—

Knox & Wells	£1,715 0 0	Watkin Williams	£1,479 0 0
William Cox	1,623 12 7	James Allan	1,464 0 0
S. Shepton & Son	1,621 0 0	Powell & Mansfield	1,451 0 0
John E. Davies	1,575 0 0	Owen Lewis	1,448 0 0
E. Turner & Sons	1,568 0 0	David Davies	1,435 0 0
W. Lissaman, jun.	1,559 0 0	Arthur J. Colborne	1,416 19 0
J. C. Richards	1,547 5 6	Charles C. Dunn, Cardiff (accepted)	1,283 9 6
Williams & Thomas	1,545 0 0		
Jones & Maddren	1,491 0 0	Cox & Bards	1,281 11 0
Williams & Hoare	1,483 0 0		

LONDON.—For the erection of an additional pavilion at the Infirmary, High-street, Homerton, N.E., for the Hackney Union Guardians. Mr. W. A. Fiuch, architect, 76, Finsbury-pavement, E.C. Quantities by Mr. R. J. Stamp, 116, Evering-road, Stoke Newington, N.:—

W. T. Davenport	£31,900 0	Kirk & Randall	£30,461 0
B. E. Nightingale	34,735 0	H. Wall & Co.	29,956 0
Albert E. Symes	34,640 0	Francis Thoday & Co., Ltd.	29,852 0
Wm. Shurmur	32,877 0	T. R. Lamble, 16, Rhyl-street, Kentish Town*	28,731 0
J. Chessum & Sons	32,699 0		
W. Holt & Sons	31,229 10		

* Accepted.

LONDON.—For paving Waller-road, for the Greenwich Board of Works. Mr. James R. Heward, Road Surveyor:—

Fry Bros.	£1,998	J. Mowlem & Co.	£1,022
Robertson & Grant	1,387	Henry Woodham, 120, Blackheath Hill*	1,016
A. T. Catley	1,150		
William Wadey	1,075		

* Accepted.

LONDON.—For new factory, for Messrs. R. H. & S. Rogers, at Cliftonville, Bolena-road, Bermondsey. Mr. F. W. Ledger, architect. Quantities by Mr. W. Burrell:—

Harboro	£1,792	Holt & Son	£1,550
Scharien & Co.	1,683	Woodward & Co.	1,533
Goad	1,642	J. O. Richardson*	1,444
Greenwood	1,561		

* Accepted.

LONDON.—For the erection of new mission hall at Nunhead, for the Trustees of the Cheltenham College Mission. Messrs. C. & A. N. Innes, architects. Quantities by Mr. G. Silvester:—

Downs	£765	Hart Bros.	£713
Marsland	735	Balaam	645
Parker	719	J. O. Richardson*	630

* Accepted.

LONDON.—Accepted for pulling down and rebuilding No. 65 and 67, St. John-street, Clerkenwell, E.C. Quantities supplied:—

J. O. Richardson, Albert Works, Peckham £1,538

LONDON.—For proposed two new shops at High-street, Plumstead, S.E. Mr. J. O. Cook, architect, Woolwich. No quantities supplied:—

J. O. Richardson	£1,658	Foreman	£1,387
Sendford	1,539	Kettly	1,375
Hodge	1,410		

LONDON.—For the supply of 3,000 ft. granite (Guernsey) kerb, for the Greenwich Board of Works. Mr. James R. Heward, Road Surveyor:—

	Per foot run. 6 by 12	12 by 8.
	s. d.	s. d.
William Griffiths	1 4½	1 9
Henry Woodham	1 5	1 8
Fry Brothers	1 4½	1 9
John Mowlem & Co., Grosvenor Wharf, Westminster *	1 4	1 8

* Accepted.

LONDON.—For rebuilding No. 126, Great Portland-street, W., for Mrs. J. King. Mr. C. —. Worley, architect. Quantities by Mr. R. C. Gleed:—

J. Greenwood	£2,655	Courtney & Fairbairn	£2,289
W. Downs	2,486	Webber	2,280
Lawrance & Sons	2,441		

Sanitary Work.

Fleming £256 13

LONDON.—For paving and making-up Waller-road (further portion), Nunhead, in the Parish of St. Paul, Deptford, for the Board of Works for the Greenwich District:—

Fry Bros.	£1,988	Wadey	£1,070
Robinson & Grant	1,387	Mowlem & Co.	1,022
Catley	1,150	Henry Woodham*	1,016

* Accepted.

LONDON.—For fitting up an electrical wiring installation, with fittings, in the Chelsea Infirmary extension, Cale-street, Chelsea, for the Guardians of St. Luke, Chelsea. Messrs. Lansdell & Harrison, architects, 12, Compton-terrace, Highbury, N.:—

Buckley & Beach	£634 0 0	Dadge & Fraser	£380 0 0
Wm. Whiteley	498 10 0	The Brush Engineering Co.	354 1 0
Hailey & Co.	463 0 0	Spagnoletti & Crookes	350 0 0
Perrit & Hards	430 0 0	W. Seymour	350 0 0
Benham & Sons	420 0 0	Hollingum & Saword	345 0 0
Paterson & Cooper	407 5 0	Graham & Biddle, Oxford-street, W.*	338 12 6
Fowler, Lancaster, & Co.	397 14 0		

* Accepted.

LONDON.—For new shop front and alterations to 169 King-street, for Messrs. Beckett & Taverner, of 165, King-street. Mr. J. Hume, architect:—

Brown	£196	Pope & Co.	£183

LONDON.—For reconstructing the "Jolly Gardeners" public-house into a private house, for Messrs. Fuller & Co., Griffin Brewery, Chiswick. Mr. J. Hume, architect and surveyor, Chiswick:—

Leslie & Co.	£443 0	W. H. Gibbs & Co.	£373 0
Adamson & Son	440 0	Chamberlin Bros.	369 10

MARGATE (Kent).—For the erection of six shops and stabling in Northdown-road, for Mr. Nathaniel Abrahams. Mr. Walter Graves, architect, Winchester House, Old Broad-street, London, E.C. Quantities by Mr. R. W. Griffiths, 22, Henrietta-street, London, W.C.:—

Paramor & Sons	£5,747	E. Padget	£5,300
W. W. Martin	5,559	W. T. Denne	5,273
J. Brown & Son	5,456		

MANCHESTER.—For the execution of road works, Paradise-street, &c., Eccles, and a street off Alexandra-road, Patricroft. Mr. J. Bowden, surveyor, 14, Ridgefield, Manchester:—

Paradise-street.

Brown, Philips, & Co.	£335 16 4	Wm. Snape & Sons	£219 13 0
Geo. Bozson	300 0 0	Robt. E. Jones, Patricroft*	213 0 0
Edwd. Henthorne	263 1 0		
Johnson Bros. & Smith	220 0 0		

Alexandra-road.

Brown, Philips, & Co.	£74 14 9	Wm. Snape & Sons	£49 6 2
Edwd. Henthorne	63 5 0	Johnson Bros. & Smith, Patricroft*	45 6 9
Geo. Bozson	60 3 6		
Robt. E. Jones	51 0 0		

* Accepted.

MARGATE (Kent).—For the erection of one shop and stabling in Northdown-road, for Mr. Lewis Myers. Mr. Walter Graves, architect, Winchester House, Old Broad-street, London, E.C. Quantities by Mr. R. W. Griffiths, 22, Henrietta-street, London, W.C.:—

W. W. Martin	£1,087	E. Padget	£1,000
J. Brown & Son	1,054	Paramor & Sons	961
W. T. Denne	1,043		

NORWICH.—For the erection of implement sheds adjoining the approach to the Castle gates. Mr. Arthur E. Collins, City Engineer:—

Scarles Bros.	£610	M. G. Hunt	£580
S. Sendall	589	Plumb & Browne*	547

[All of Norwich.]

[City Engineer's estimate, £570.]

For Cleaning and Flushing Cattle Market for Three Years.

	Per annum.		Per annum.
A. Stimpson	£350	J. Bowles*	£270
J. H. Knights	280		

[All of Norwich.]

* Accepted.

NORTH BERWICK.—For drainage works, &c., at public school-buildings, for the School Board. Messrs. Thomson & Deas, C.E., 75, Bath-street, Glasgow:—

Moses Speirs & Son	£389 0 0	James Coulter	£215 7 9
T. Crawford & Son	281 0 0	James Kendal	202 10 8
C. Hegney & Son	277 0 0	Brown & Young, 7, Bath-st., Glasgow*	169 0 0
James Glass	243 4 7		
Lachlan Taylor	217 11 0		

* Accepted.

PORTOBELLO (N.B.).—For the execution of sewerage works, for the Commissioners. Messrs. Belfrage & Carfrae, C.E., 1, Erskine-place, Edinburgh:—

J. W. & G. Stratton	£785 18 3	L. & W. McDonald	£641 19 11
R. C. Brebner	765 0 0	John Morris & Sons	628 7 6
James Stevens	752 7 5	Henderson & Duncan, Harmony Villa, Morningside, Edinburgh (accepted)	597 6 9
George Mackay & Son	745 8 6		
Richard Wallace	740 18 0		
D. McDonald & Son	683 2 4		

[All tendered for on Schedules of Prices.]

PORTSMOUTH.—For the erection of school-buildings, Francis-avenue, Southsea, for the School Board. Messrs. Rake & Cogswell, architects, Prudential-buildings, Landport. Quantities by Mr. C. W. Ball, Whittington-chambers, Southsea:—

Light & Son	£16,983	H. Jones	£15,762
Sprigings Bros.	16,235	W. Ward	15,683
J. H. Corke	16,120	J. Crockerell	15,500
W. Evans	15,780	J. W. Perkins, Southsea*	14,499

* Accepted.

TO CORRESPONDENTS.

J. W. (below our limit).—C. J., T. N., T. S., J. W. M., J. F. W., H. T. G., T. L., G. W. W. (amounts should have been stated).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post*.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER," No. 46, Catherine-street W.C.

W. H. Lascelles & Co.,

121, BUNHILL ROW, LONDON, E.C.

Telephone No. 270.

HIGH-CLASS JOINERY,

LASCELLES' CONCRETE

Architects' Designs are carried out with the greatest care.

CONSERVATORIES,

GREENHOUSES,

WOODEN BUILDINGS,

Bank, Office, & Shop Fittings.

CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

PORT TALBOT (Wales).—For the execution of drainage works, Bryn, Duffryn Valley. Mr. E. Osbourne, surveyor for Margam Estates, Margam, Port Talbot:—

T. W. Davies	£222 0 0	E. H. Page	£155 0 0
Thos. Jenkins	187 17 6	Barnes, Chaplin, & Co., Cardiff*	143 7 10
Ino. O'Brien	176 10 6	Batchelor & Snowden	129 3 10
D. Jenkins	155 16 8		

* Accepted.

READING.—For street improvement works, Reading. Mr. John Bowen, Borough Engineer and Surveyor, Town Hall, Reading:—

Thos. Free & Sons	£685	F. Talbot, Reading*	£610
G. & C. Allen	673		

[Borough Engineer's estimate, £593 1s. 9d.]

* Recommended for acceptance.

SANDGATE.—For erecting Mr. Alborough's house, Riviera, Sandgate. Mr. Reginald Pope, architect, Folkestone:—

Webster	£1,364	Mercer	£1,200
Tunbridge	1,305	Petts*	1,187
Fearon	1,300	Grayling†	1,175
Franklin	1,299		

* Accepted. † Late.

TONBRIDGE.—Accepted for making roads and sewers on the Meadow Lawn Estate. Messrs. Pomfret & Co., surveyors, Tunbridge Wells:—

W. H. Wheeler, Sumner-street, S.E. £2,495 15 10

TUNBRIDGE WELLS.—Accepted for making-up Shatters' wood-road, for the Tunbridge Wells Corporation. Mr. Millar, surveyor:—

W. H. Wheeler, Sumner-street, S.E. £1,208 14 10

TUNBRIDGE WELLS.—Accepted for making-up Grosvenor Park, Tunbridge Wells. Messrs. Pomfret & Co., surveyors:—

W. H. Wheeler, Sumner-street, S.E. £595 5 0

TWICKENHAM.—For building new coach-house, stabling, &c., at the "Prince Blucher," for Messrs. Fuller & Co, Griffin Brewery, Chiswick. Mr. J. Hume, architect and surveyor, Chiswick:—

Speechley & Smith	£178 10	A. Slade	£171 15
Hicks & Son	174 10		

WARRINGTON.—Accepted for forming, paving, &c., Marsh-street and four other streets, for the Corporation. Mr. Thos. Longdin, Borough Surveyor, Town Hall, Warrington:—

Marsh-street.

F. J. Bennie, Liverpool-road, Warrington £412 12 2

Rose-road.

F. J. Bennie 10 8 8

Pass, between Wellington-street and Lord Nelson-street.

Thos. Stringer, Fennel-street, Warrington 206 9 2

THE BATH STONE FIRMS, Ltd.

BATH,

FOR ALL THE PROVED KINDS OF

BATH STONE.

FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

DOULTING STONE.

CHARLES TRASK & SONS,

(THE DOULTING STONE COMPANY),

DOULTING, SHEPTON-MALLET.

London Agent:

E. A. WILLIAMS, 16, Craven-st., Strand, W.C.

HAM HILL STONE.

The attention of Architects is specially invited to the durability and beautiful COLOUR of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.'S

INK-PHOTO PROCESS,

4 & 5, East Harding-street,

Fetter-Lane, E.C. [Advt

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.

METCHIM & SON, 20, Parliament-st. S.W.

"QUANTITY SURVEYORS' TABLES,"

For 1896, price 6d. post 7d. In leather 1/- Post 1/1 [ADVT.

PILKINGTON & CO

(ESTABLISHED 1838),

MONUMENT CHAMBERS,

KING WILLIAM STREET, LONDON, E.C.

Registered Trade Mark,

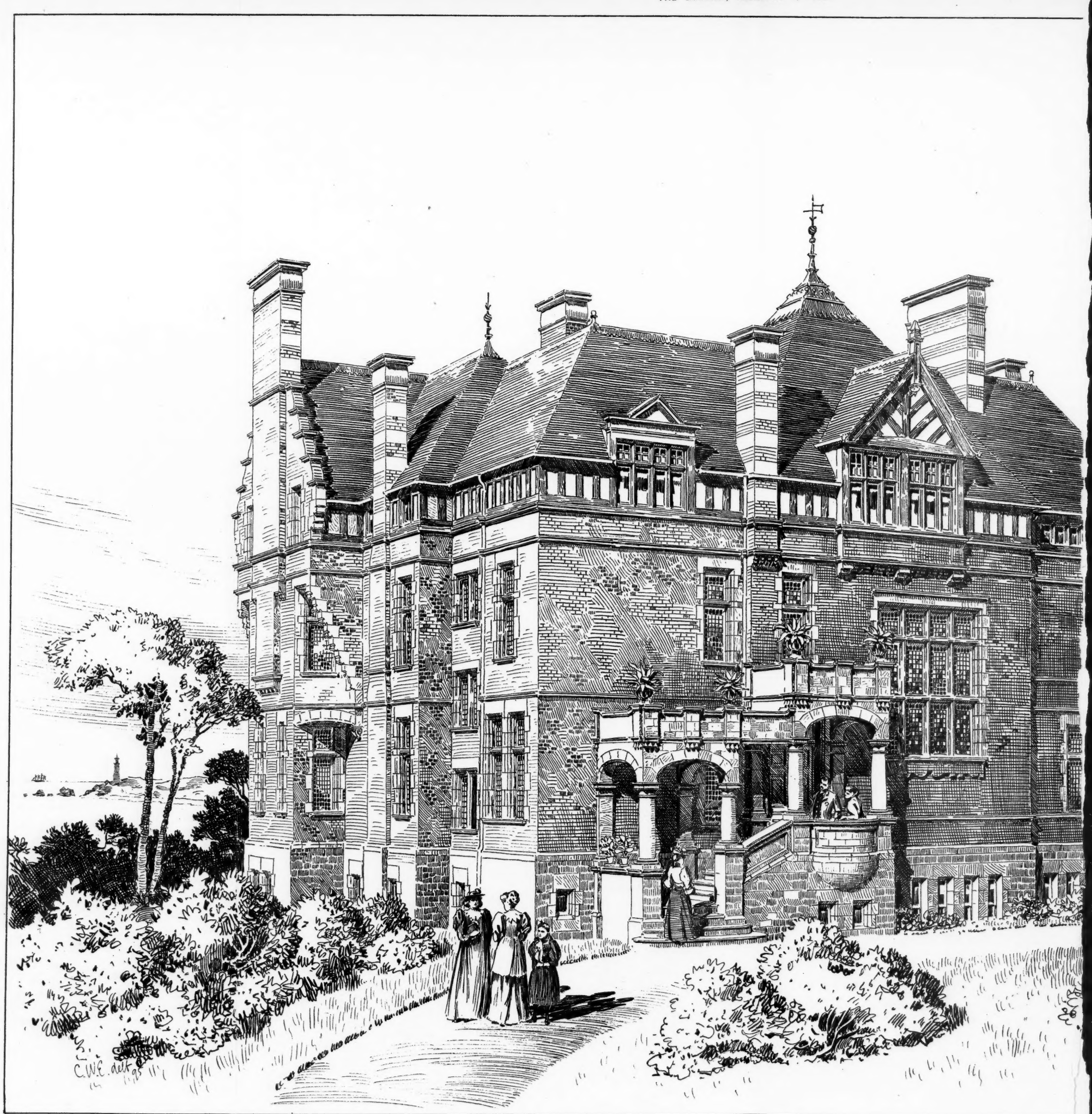
Poloncean Asphalte.

PATENT ASPHALTE and FELT ROOFING.

ACID-RESISTING ASPHALTE.

WHITE SILICA PAVING.

SEYSSEL ASPHALTE.

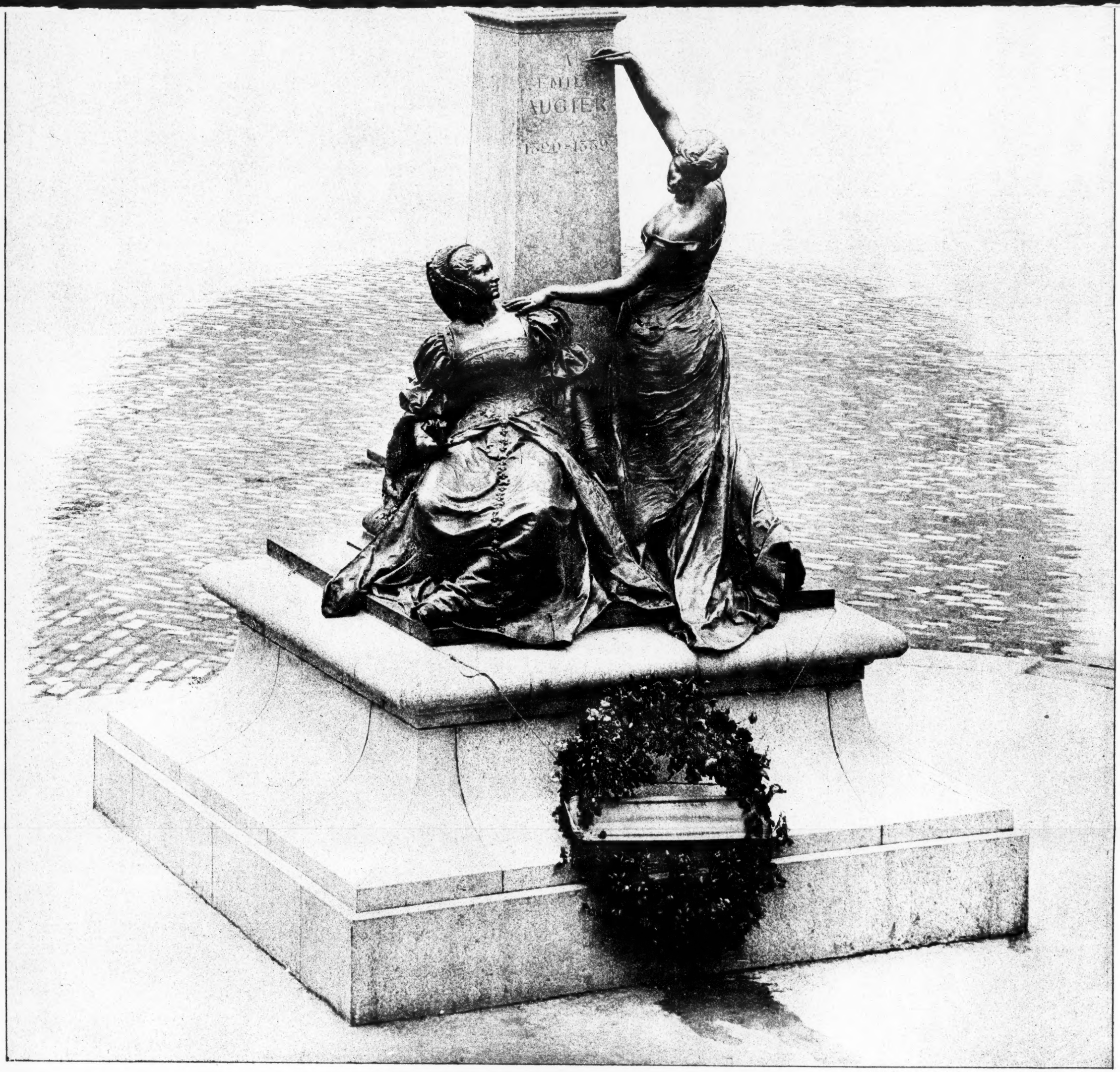


NORTH-EAST VIEW OF A MANSION, FOLKESTONE.—Mr. G. H. Gordon, Architect.

PHOTO-LITHO. SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE E.C.

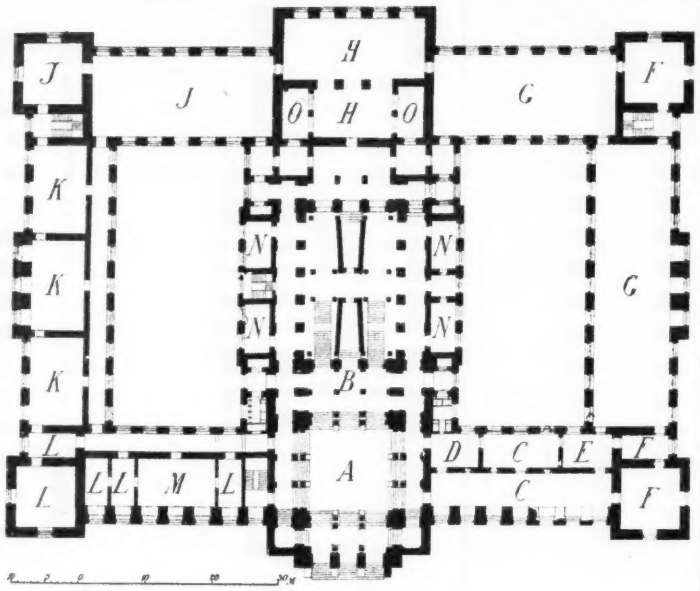
-EAST VIEW OF A MANSION, FOLKESTONE.—Mr. G. H. Gordon, Architect.

AUGIER
1820-1889



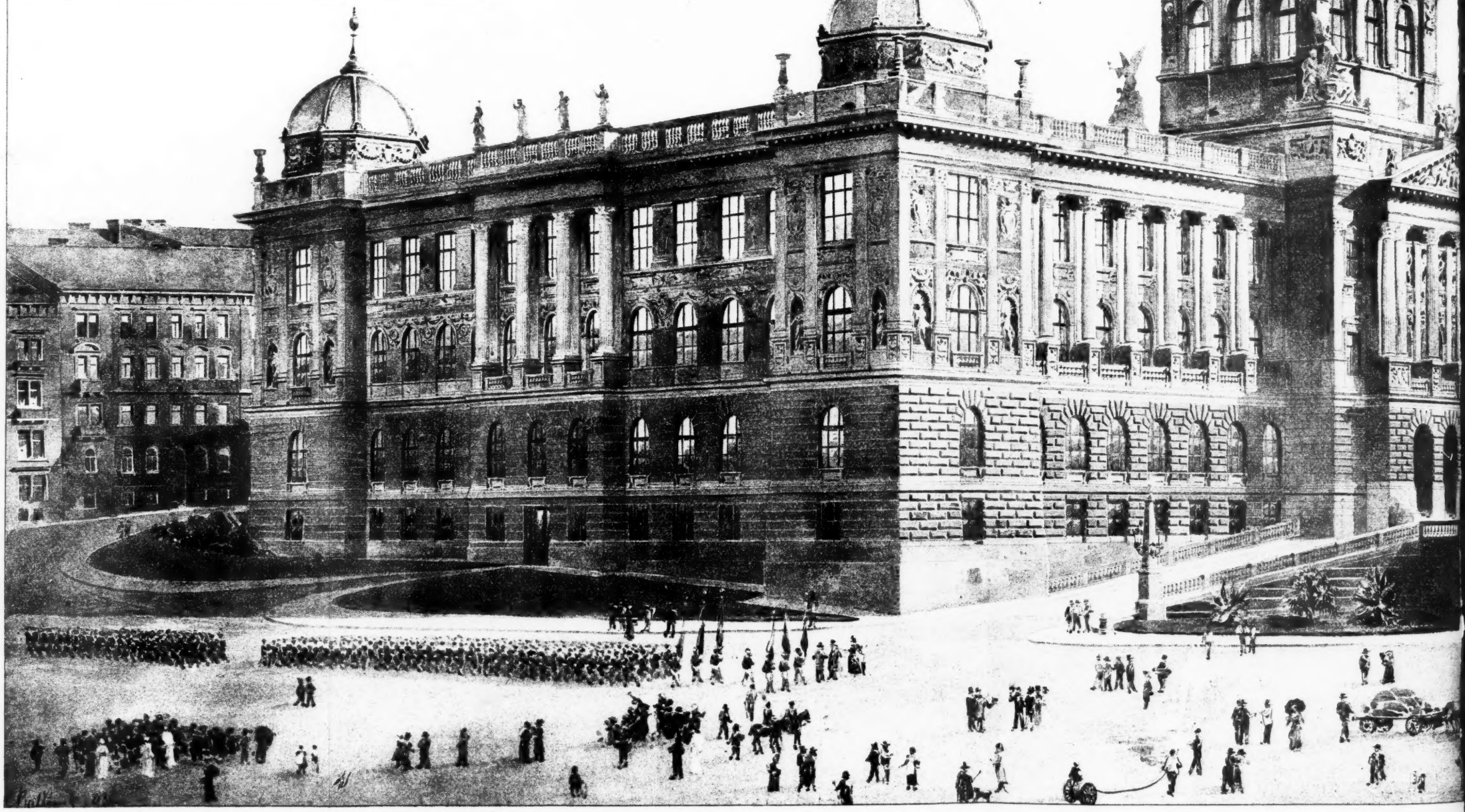
INK-PHOTO. SPRAGUE & CO. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

MONUMENT TO EMILE AUGIER: ON THE PLACE DE L'ODÉON, PARIS.—M. ERNEST BARRIAS, SCULPTOR.

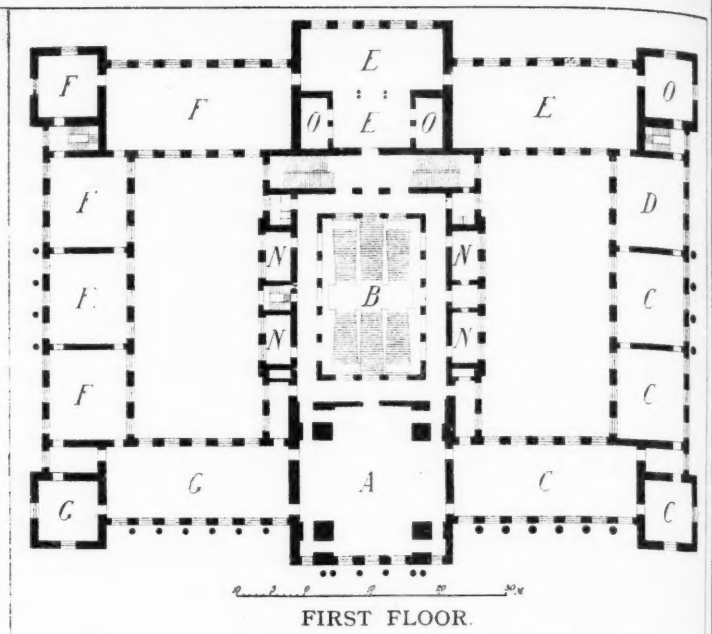


GROUND FLOOR.

A. Grand Vestibule
B. Grand Staircase.
C. Reading Room.
D. Ante Room.
E. Catalogues.
F. Librarian.
G. Library.
H. Etchings.
J. Picture and Sculpture Gallery.
K. Committee Room.
L. Office.
M. Board Room.
N. Custodian.
O. Area.



THE NATIONAL BOHEMIAN MUSEUM, PRAGUE.—Professor Jos. Schulz, Architect.

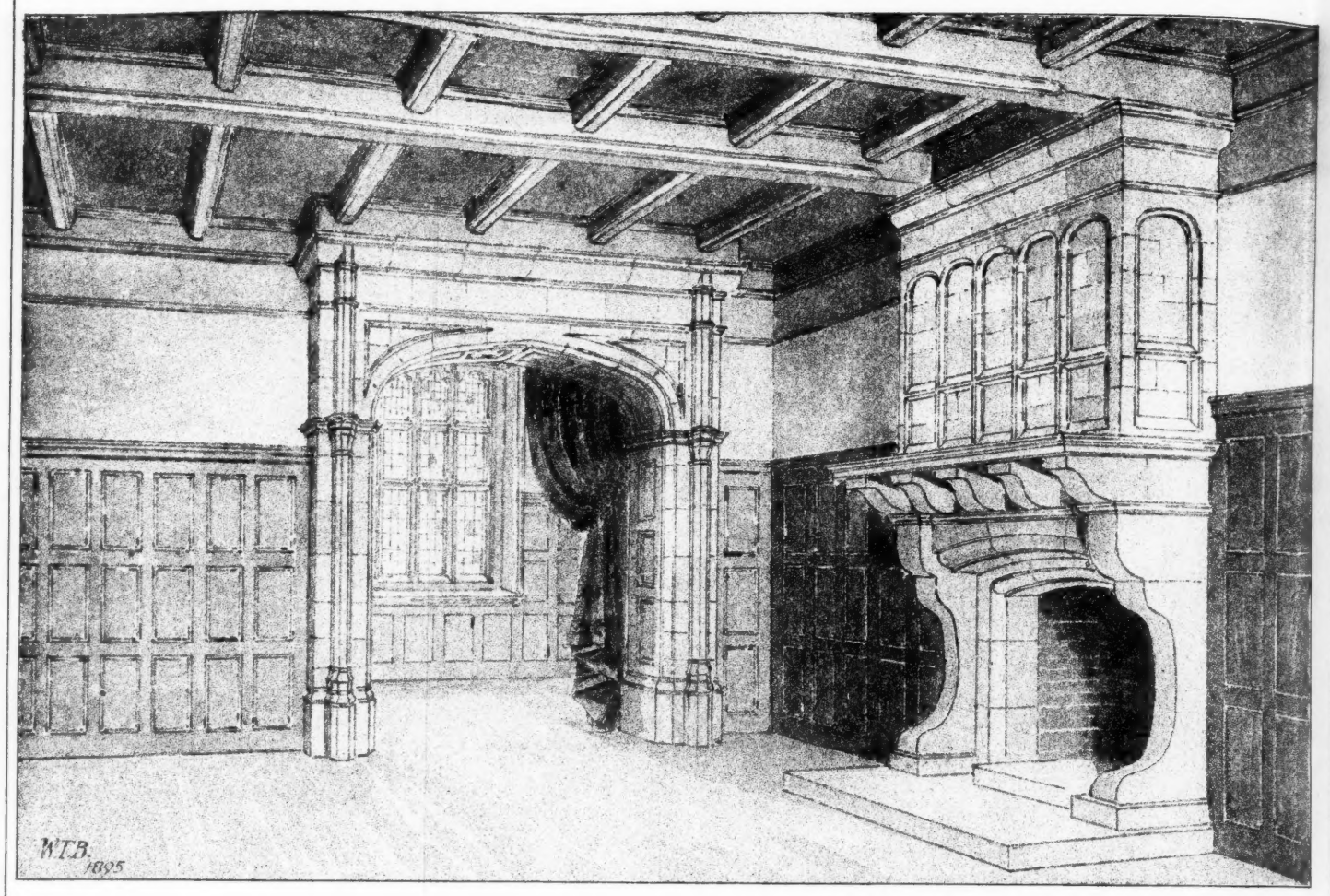


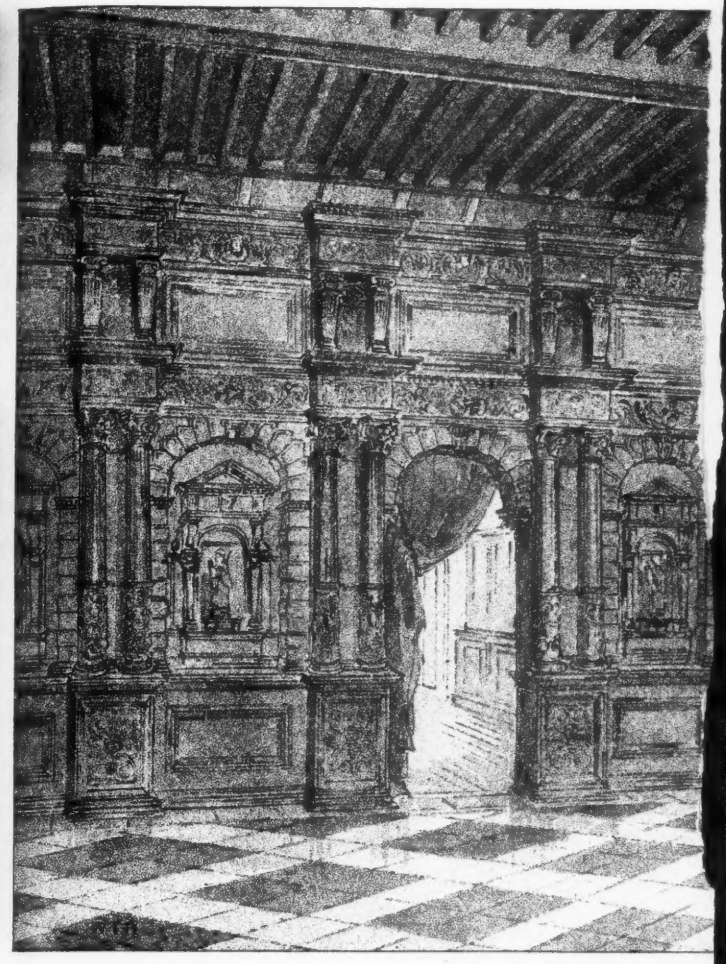
FIRST FLOOR.

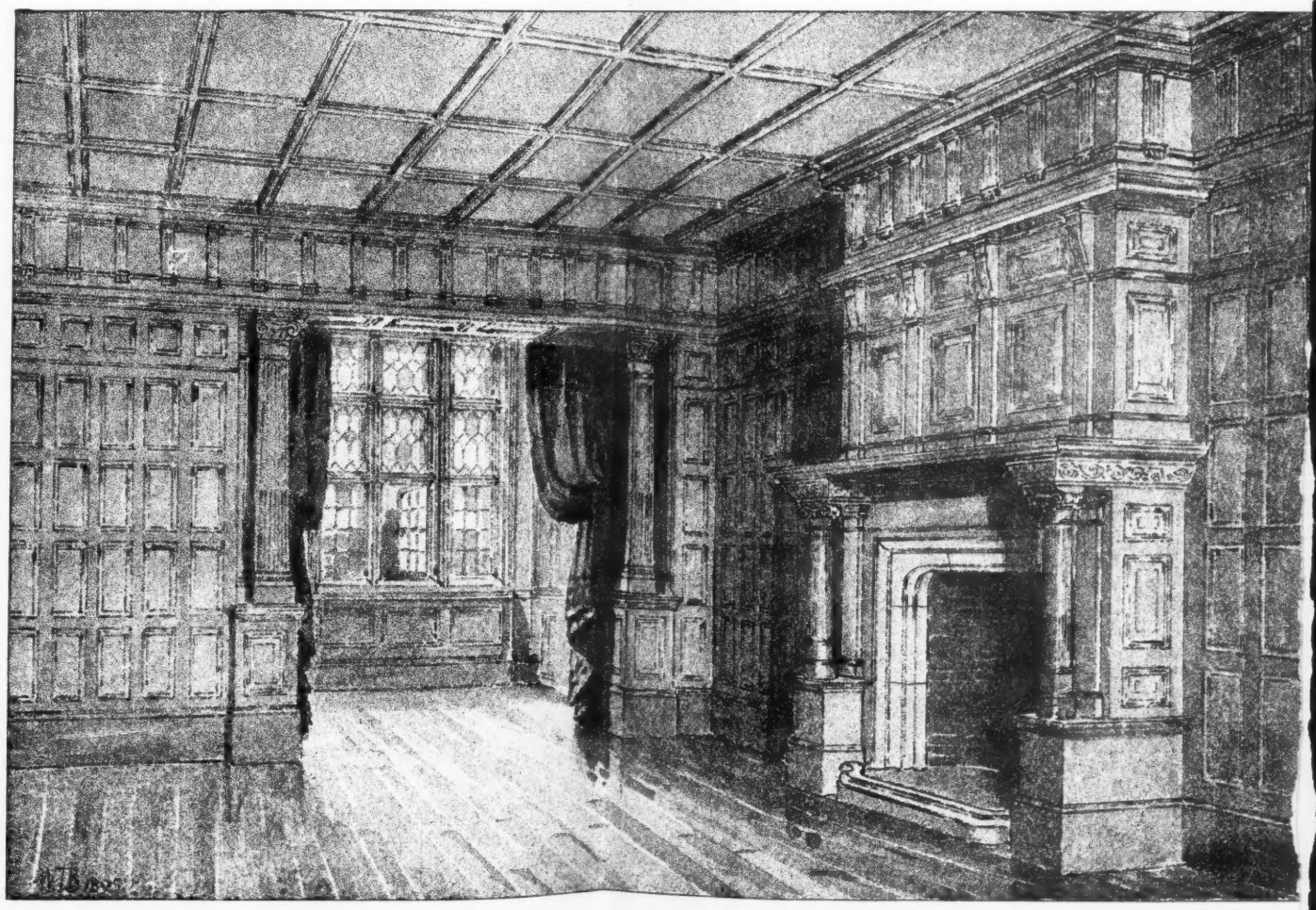
A. Pantheon.
B. Grand Staircase.
C. Geological Collections.
D. Botanical Collections.
E. Ethnographical Collections.
F. Archæological Collections.
G. Manuscript Collections.
N. Custodians.
O. Areas.

INK-PHOTO. SPRAGUE & CO. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

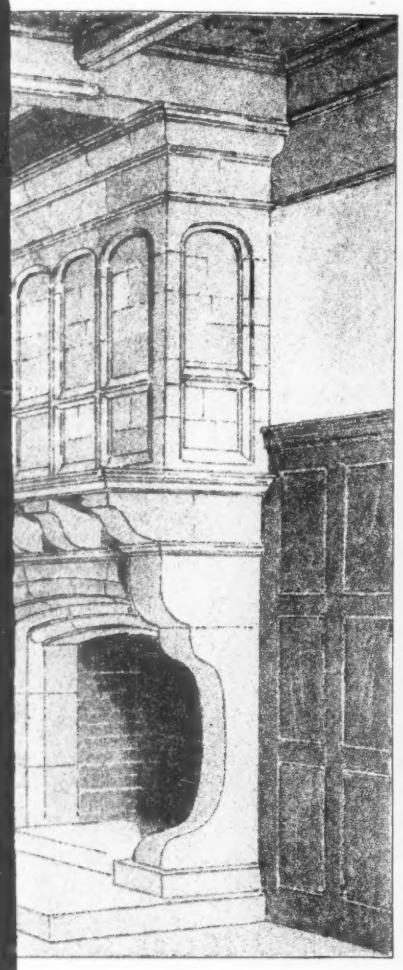
ONAL BOHEMIAN MUSEUM, PRAGUE.—Professor Jos. Schulz, Architect.

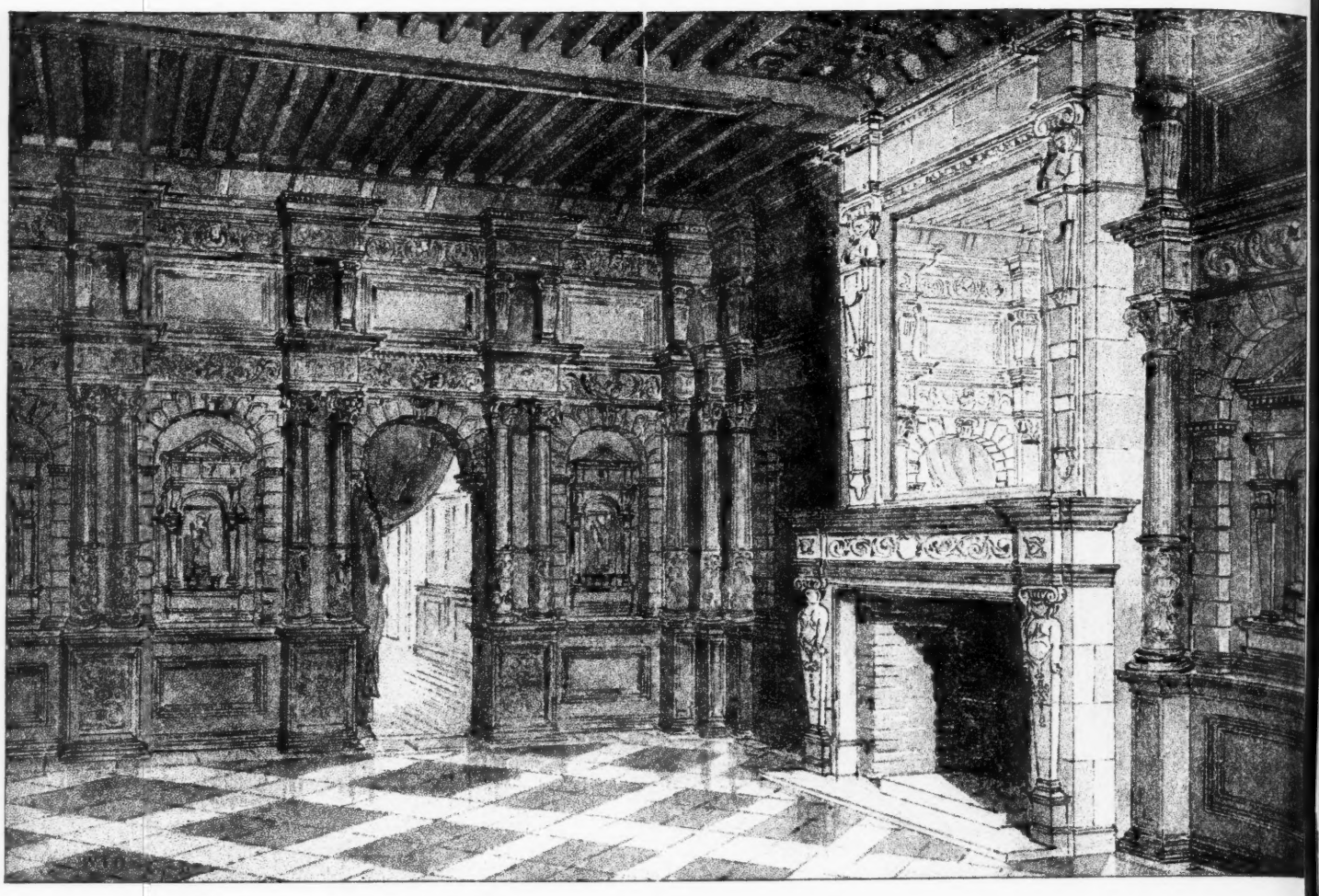


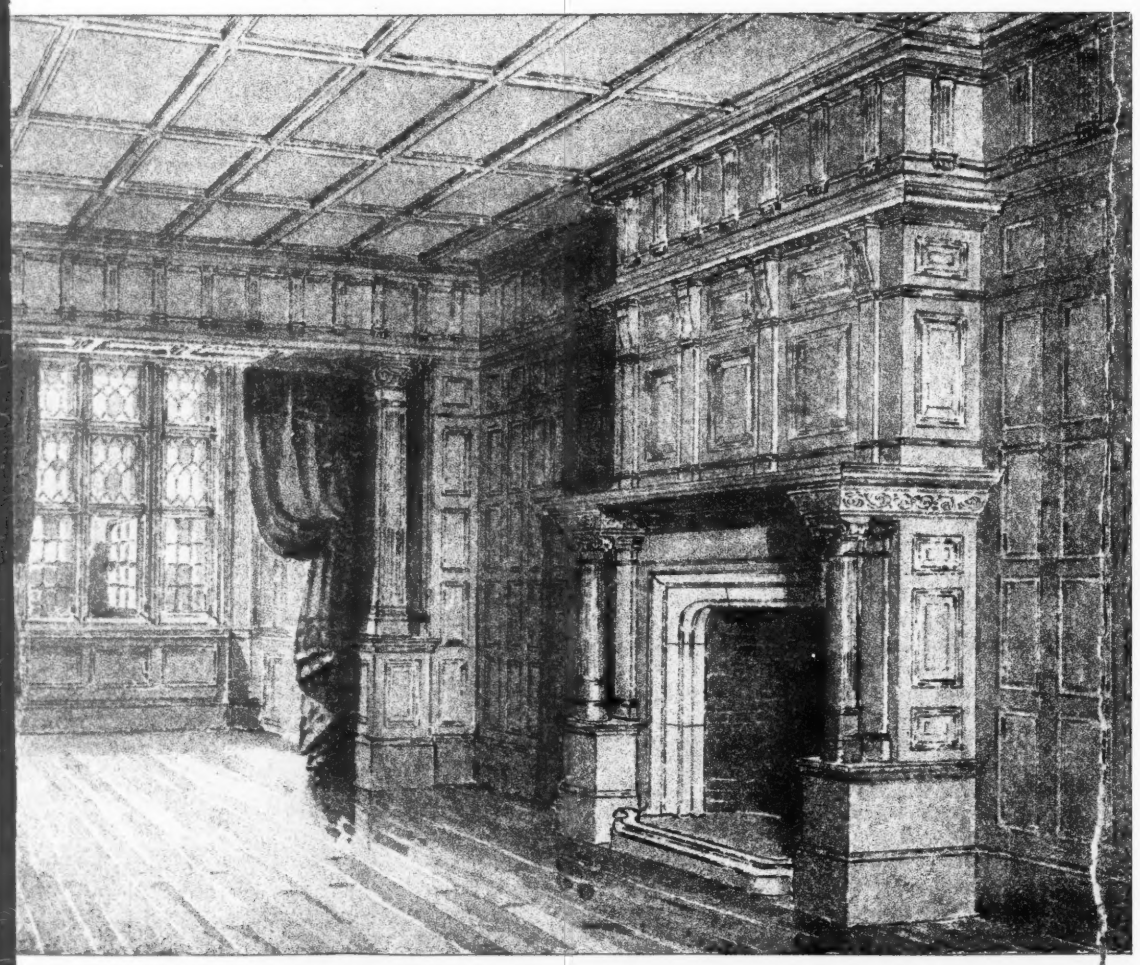




THREE ALTERNATIVE DESIGNS FOR THE TREATMENT OF THE STUDY.—By. Mr. W. Tillott Barlow, A.R.I.B.A.







INK-PHOTO. SPRAGUE & CO. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

ESIGNS FOR THE TREATMENT OF THE STUDY.—By. Mr. W. Tillott Barlow, A.R.I.B.A.